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ABSTRACT

This is a collection of articles from the 1962-70 DGWS Track and Field Guides and from National Institute Proceedings on the subject of girl's track and field activity. Included among the selections are articles on teaching outlines for track and field; distance running for girls and women; athletic injuries; hurdling for girls and women; adaption of the pentathlon for high school girls; and coaching beginners in the shot, discuss, and javelin. Highlighted in many of the articles are discussions of physiological aspects of competition for women which stress the mythic quality of beliefs that women are too weak for some sports and that physical activity during menstruation is bad. (JA)

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SPORTS ARTICLES REPRINT SERIES

Selected Track and Field Articles

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This collection of articles from 1962-1970 Track and Field Guides and from National Institute Proceedings is the latest in AAHPER'S Sports Articles Reprint Series, a special project of the Division for Girls and Women's Sports. This is the first edition of selected Track and Field Articles.

SP 006 724

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PREFACE

Since the first publication of DGWS's separate edition of the *Track and Field Guide* in 1962, the participation in and enthusiasm for track and field at all age levels for girls and women continued to grow.

This compilation of *Selected Articles in Track and Field,* taken from DGWS *Guides* and from *National Institute Proceedings,* is a further effort of DGWS to continue to encourage and instruct girls, coaches, and teachers so they may improve performances, conduct better meets, and discover more effective ways of teaching and coaching.

The articles were chosen from many fine contributions by coaches and teachers who are among those responsible for the significant and rapid growth of track and field participation. The articles were selected because of their lasting interest and current value to both experienced and inexperienced performers.

As women continue to improve in sports and opportunities for participation increase, there will continue to be a need for improving coaching and teaching techniques. It is hoped that this collection of articles will support this effort.

Dorothy Harkins
Editor

Introduction

Contribution of Track and Field to the Development of Girls and Women

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As a member of the 1948 Women's Olympic Track and Field Team, I will never forget the impression I received then I read the Olympic Creed written on the huge scoreboard overlooking the athletic stadium, "The important thing in the Olympic Games is not winning but taking part. The essential thing in life is not conquering but fighting well." Although this excellent piece of philosophy has been ignored and disregarded by many, I think that one may find it in the key to the philosophy of the women's track program. There are three important factors in this philosophy: (a) The skills involved in track and field are basic to practically all physical activities; (b) the program of activity is so varied that almost any girl can find a place in it regardless of her size, shape or age; (c) track and field helps to contribute toward the development of girls and women.

The skills involved in track and field include running, jumping, and throwing. Men and women as well as boys and girls have been engaging in these skills throughout the history of man. In earlier societies, they were essential to man as a means of survival; now they are essential to boys and girls because they are basic to nearly every activity. How often have you watched a youngster at play? Very seldom will you see one walking when he can run. Often he will jump over an obstacle instead of going around it, and inevitably he will pick up any object which can be thrown. This is true of girls as well as boys. Girls have been engaging in track and field events ever since they have been able to run, jump, and throw. Since girls do engage in these basic skills, it seems imperative that we teach them how to perform correctly. Learning to perform the skills of running, jumping, and throwing correctly is a challenge. The challenge is not only one of breaking records but of achieving efficient movement. Many values can be achieved with proper leadership, adherence to accepted standards, and moderate emphasis upon the track program.

Each of us comes into this world equipped with certain potentialities: a body type, physiological characteristics, and a capacity

for learning. The interaction of our potentialities with our environment results in the development of our personalities. For example, a child who has little opportunity to run, climb, jump and throw will not only be hindered in his physical development, but will be greatly handicapped in his emotional and mental development. A child learns who he is by his physical experiences.

Track and field offers a variety of events, and every girl regardless of her size, shape, or age can find herself a place in the program. The actual degree of her participation in the long run will depend upon her individual needs and interests. Runners come in all shapes and sizes—some are tall, some are of medium height and some are even short—but they must possess quick reaction time, speed, and agility. Jumpers also come in all sizes; they should possess good coordination, strong legs, speed, and agility. Throwers, contrary to common belief, are not necessarily the heaviest girls because strength is not the only prerequisite involved; they must have quick reflexes, good coordination, and the ability to explode their energies.

What does participation in track and field offer a girl? In general, it helps develop her physical, mental, and emotional capacities to their highest levels of achievement. Specifically, it can contribute in a number of ways to her total development. It leads to development of strength, endurance, agility, and coordination. It teaches discipline of the mind as well as the body; it teaches the acceptance of victory and defeat through the experience of team effort as well as individual effort. Participation in track and field activities will help a girl learn to organize and plan her time wisely. It will give her the opportunity to meet interesting people. As her skills improve, she will develop self-confidence particularly if she receives recognition for her accomplishments. Track and field makes a real contribution to the development of efficiency of movement through the utilization of running, jumping, and throwing skills. It presents a challenge to women of varying body types. And finally, as a sport it is rather broad in scope, offering participants the opportunity to try their skills at a variety of events.

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Run for Fun

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In recent years, great emphasis has been placed on the physical fitness of American youth. It has been stated that many students need to ". . . get fit *to* play and not necessarily *by* play."[1]

Cardiovascular efficiency is considered to be an important phase of physical fitness. Unfortunately, the achieving of endurance appears to be tedious and unimportant to many girls. Possibly, if interesting and effective methods for improving endurance were used, girls would exert themselves to a greater extent.

Running is considered to be one of the best ways to improve cardiovascular endurance. Through a well planned conditioning program, running develops the heart and circulatory system and contributes to basic body conditioning.[2]

Running can also be very satisfying to the individual. Doherty has stated that running is a "natural" activity providing a sense of achievement for its own sake.[3]

To paraphrase Okazaki, like a drawing in India ink of the whispering of the winds in the pines, the ecstasy experienced in skilled performance can only be suggested; only by actual participation in an activity can one comprehend a feeling of accomplishment and satisfaction.[4]

Physical educators are entrusted with the challenge to motivate girls to develop their ability to run. According to Webster, "motivation is the stimulation of active interest in some study through the appeal of associated interests." The physical educator, in order to motivate her pupils to run, must realize the opportunity and the need for inventive adaptations of running skills. Interest and effort are contagious and spread from pupil to pupil. How then, can motivation for running be incorporated into the physical education class?

Have you ever used running the track as punishment in your class? What effect did it have on the girl's attitude toward running?

---

[1]John T. Powell, *Track and Field Fundamentals for Teacher and Coach.* Champaign, Ill.: Stipes Publishing Co., 1962.

[2]Joe Barba, "Questions and Answers for the Distance Runner," *Athletic Journal 47* (Sept. 1966), pp. 68:92-94.

[3]Ken Doherty, "Why Men Run," *Quest*, Monograph II (April 1, 1969), pp. 61-67.

[4]M.S. Okazaki, *The Esoteric Principles of Judo*. Mimeographed speech.

Assigning running under pleasant circumstances will enhance the enjoyment of the effort.

Some motivational techniques for distance running are:

1. Run in interesting surroundings. Don't always go around the track. By keeping the girls off the track, they may become eager to return to the track and will run better when they do so.
2. Place the girls in groups according to their condition and ability. Since training is specific to the individual, the groups should be small.
3. Have the girls set realistic goals for themselves and have them strive, in an organized program, to reach these goals.
4. Try a riverbottom race: Set a cross-country course through fields, arroyos, or hills and have informal races which are open to anyone. Awards could be a watermelon for first place and bananas for last place.
5. Look to clubs or team projects:
   a. Roadrunner Club—special recognition for girls who have completed a specified number of miles of jogging.
   b. 100 Mile Club
   c. Run across your state or the USA. Keep a road map on a bulletin board with the destination marked on it. Possibly accumulative miles of teams or squads can be kept to see which group reaches the destination first.

Using a variety of methods will help motivate students. Jackson lists a number of interesting combinations for interval training.

1. *Sets.* Have the girls run from two to six distances in each set—for example, 3 x 220 at 30 seconds with a set recovery period.
2. *Follow the leader.* Groups of four or five students run in line around the track; the last student runs to the front of the line to become the new pace setter. This method continues until all students in the group are leaders at some time.
3. *Wind sprints.* The girls run repeated sprints, from 30 to 150 yards, until winded.
4. *Ins and outs.* Alternate a fast 100 yards with a slow 100 yards.
5. *Back to back.* The girls repeat sprints and walk back to the start; they continue the process until winded.
6. *Continuous relay.* Eight runners with batons run 50 yards and pass to other runners. Repeat several times.
7. *Medley relay.* Pace work. Runners are paired according to their ability; the girls run against each other at designated distances.

Do your girls enjoy running? If not, one of these ideas may help them learn to run for fun.

Track and Field Program for Elementary School Children

MARY W. CONKLIN

Always teach correct rules; use modifications if necessary for safety purposes or if official rules prove too difficult for the age group.

Indoor Program

1. Make children conscious of *how* they run. Stress:
   a. Running on balls of feet (demonstrate the spring which toes can give).
   b. Use of arms.
   c. Slight body lean (from hips).
   d. High knee action.
2. Run short springs indoors. Emphasize:
   a. Running in a straight line.
   b. Maintaining speed past the finish line.
   c. Looking forward during the entire distance of the race.
   d. Slowing down gradually.

Outdoor Program (Class periods 30 to 45 minutes.) Plan only one event per class period.

1. Running
   a. Run laps at jogging speed (use judgement as to number of laps).
   b. Practice starts for distance of about 10 yards.
   c. Run one or two sprints, six children at a time.
2. Relays
   a. Practice passing in lines of six children, about 10 yards apart—walking, jogging, then running.
   b. Emphasize receiving the baton while running. (Receiver going fast enough to make the passer stretch.)
   c. Slap baton into hand of receiver (to avoid dropping baton).
   d. Emphasize that receiver should look ahead while receiving baton.

Divide into teams of four runners. Let three or four teams compete on an oval track (grass area may be used). Receiver stands with back to pole (inside of track) at the beginning of 20-yard zone,

starts to run when passer is about seven yards away, and receives the baton about midline of the passing zone. When receiving the baton, the right hand should be extended, palm up. Running is always counterclockwise.

3. Crouch start
   a. Hands behind the line, weight on thumb and fingers.
   b. Elongated start, back knee opposite instep of front foot.
   c. Bunch start, back toe opposite front heel.
   d. "Take Your Marks": resting position.
   e. "Get Set": alert, head in comfortable position, lift knee off ground.
   f. "Go": take short strides; vigorous use of arms.
4. Running broad jump (Grades 4-6)
   Pit. Dig at least 12 inches deep, then add sand, shavings, or sawdust on top, so that it is about 6 inches above ground.
   Board. Embed large board, about 18 inches x 24 inches, in the ground so as to be level with the ground.
   a. Stress that takeoff should be as close to the edge of the board as possible. Measurement is made from the nearest mark in the pit made by any part of the body, to the edge of the takeoff board nearest the pit.
   b. Teach falling forward after landing.
   c. Explain the approach: longer strides with shorter strides at takeoff.
5. Running high jump (Grades 1-6). Use other side of the same pit.
   a. For all grades, use rope with weights on ends when beginning the high jump.
   b. Use bamboo pole after children become experienced.
   c. Allow children to jump from either side or center. Try all approaches.
   d. Permit children to jump any style they prefer. Make corrections if takeoff is on the wrong foot.
   e. Do not let the children jump as high as they can in class as this eliminates too many.
   f. Continue practice at one height until it becomes fairly easy.
   g. Teach older boys and girls different styles of jumping.

ORGANIZATION OF A TRACK MEET

1. Teams
   a. Entire school (Grades 1-6) is divided into two teams. Designate a color for each team.
   b. Sixth graders choose a boy and girl for team captains.

c. Uniform: upper elementary children wear gym suits. Others wear shorts and T-shirt. Each child should wear a colored insignia indicating his team.

2. Grades 1, 2, and 3
   a. Plan shuttle or line relays, boys and girls together.
   b. Keep a separate area for these relays, classroom teachers in charge.
   c. Fasten a colored band on the arm of the last person in the relay, since young children become excited and often forget who is last.

3. Individual events
   30-yard dash (3rd grade boys)
   30-yard dash (3rd grade girls)
   40-yard dash (4th grade boys)
   40-yard dash (4th grade girls)
   50-yard dash (5th grade boys)
   50-yard dash (5th grade girls)
   50-yard dash (6th grade boys)
   50-yard dash (6th grade girls)
   Running broad jump (4th, 5th, and 6th grade boys)
   Running broad jump (4th, 5th, and 6th grade girls)
   Running high jump (5th and 6th grade boys)
   Running high jump (5th and 6th grade girls)
   Softball throw (5th and 6th grade boys)
   Basketball throw (6th grade girls)
   160-yard relay (5th and 6th grade boys)
   160-yard relay (5th and 6th grade girls)

4. Elimination
   a. Do all practicing in class time. Run tryouts in class until only three boys and three girls remain in each individual event. This will leave six children in the final of each event.
   b. Children compete only with those of their own grade level.

5. Rules
   a. Broad jump: Each contestant has three jumps. Best six contestants compete in the finals.
   b. High jump: Each contestant has three trials at each height. Three misses at any one height disqualifies a contestant.
   c. Dashes: Running out of lane disqualifies a runner.

6. Officials
   a. All upper grade and special teachers have assigned duties. Each is given a card with detailed instructions. (A faculty meeting is held to clarify all points.)
   b. *Clerk of Course*: Has lists of all entries. Checks them in at start of event.

c. *Finish judges* (three): Assigned to pick first, second, and third place winners. First place judge has a card with names of contestants and teams. This card is filled out at the end of each event and sent to the scorer.
d. *Starter*: Starts all races with whistle or clapper.
e. *Announcer*: Should use a public address system if possible.
f. *Scorer*: Keeps scoresheet as meet progresses. Keeps cumulative score on blackboard or bulletin board.
g. *Judges for jumping events* (two): Conduct and measure event.
h. *Judges for throwing events* (two): Conduct and measure event.

7. Student officials
   a. Two, to hold yarn at finish line
   b. Two, to act as messengers
   c. Two, in charge of equipment
   d. One, to help at jumping events (raking pit, replacing crossbar, etc.)
   e. Four, to help with primary relays.
8. Suggestions
   a. Start with flag ceremony (captains carry flags).
   b. Keep all equipment in a large box near the scorer's table.
   c. Paint batons with team colors.
   d. Mark grass with dry lime.
   e. Use point system of 5-3-1 for first, second, and third places.
   f. Have a plaque in school showing each year's winners.
9. Ideas
   a. Meet should start at 9:30 a.m. and finish at approximately 11:30 a.m.
   b. PTA may serve lemonade and cookies in classrooms at the close of the meet.
   c. Felt emblems may be used as awards for individual events and winning relay teams.

Teaching Unit Outline for Track and Field

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I. Minimum Facilities, Equipment, and Supplies for an Excellent Track and Field Unit

A. Facilities
   1. Outdoor play area 50 yards x 100 yards, football field, preferably a track field
   2. Sand pit 5 feet x 9 feet
B. Equipment
   1. High jump standards and a crossbar
   2. Batons
   3. Hurdles, 30 inches
   4. Shot put, 8 pounds for girls; 4 kilos for women
   5. Discus (rubber), official weight for girls
   6. Starting blocks (inexpensive and practical) can be made in wood shop
   7. Baseball or softball
   8. 7-foot circle for shot put
   9. 8 foot circle for discus
   10. Takeoff board or mark for long jump
C. Supplies
   1. Lime and linemarker
   2. Tape measure 100 feet and 200 feet
   3. Whistle
   4. Stopwatch
   5. Wood shavings for high jump area

II. General Objectives

A. Develop increased appreciation for track and field.
B. Strengthen muscles, develop cardiovascular endurance, and increase total body efficiency.
C. Develop sports skills, grace, sense of rhythm, and improved reaction time; develop coordination of the special senses with body movement, including the ability to judge accurately speed, distance, force, weight, and timing of movement.

D. Encourage individual self-confidence, initiative, self-direction, and a feeling of belonging; develop sportsmanship, leadership, self-discipline, sociability, and social cooperation.
E. Provide a means for testing individual physical ability.
F. Provide a carryover activity for the maintenance of physical fitness.

III. Content

Unlike most activities, there are enough events in track and field to give each person an opportunity to do well. The ectomorph, endomorph, and mesomorph will all find events to their liking.

There should be no attempt to teach one technique to boys and another to girls. The principles and techniques are the same for both; the activities offer allowances for sex differences. Because of the nature of track and field there is no breakdown between beginners, intermediates, and advanced levels. Beginners should be taught the proper techniques and methods from the start.

A. Running events
- 50-yard dash
- 75-yard dash
- 100-yard dash
- 220-yard dash
- 440-yard run
- 600-yard run
- 880-yard run

B. Hurdles
- 50-yard hurdles
- 70-yard hurdles
- 50-meter hurdles
- 280-yard shuttle relay

C. Pursuit and shuttle relays
- 220-yard pursuit
- 220-yard shuttle
- 300-yard pursuit
- 300-yard shuttle
- 440-yard pursuit
- 880-yard pursuit
- 880-yard medley (440, 110, 110, 220)
- 440-yard sprint medley (220, 110, 65, 45)

D. Field Events
- Shot put
- Basketball throw
- Baseball throw
- Softball throw
- Discus throw
- Running long jump
- Standing long jump
- Running high jumps

IV. Teaching Hints and Progressions

A. Teaching hints

Warm-up and general conditioning can be presented to the entire

class at one time. An exercise series should be used each day before participation to prevent injuries. The warm-up or conditioning should include jogging, walking exercises, running in place, and deep breathing. The series of warm-up exercises should coincide with techniques to be covered that day.

1. In class all students should have an opportunity to experience all events. It is usually preferable to group students into squads according to their level of skill. If the class is large, each squad should have a leader who can direct the practice within the squad.
2. Techniques of each event can be presented to the entire class. Fundamental principles should be stressed, and practice with limited equipment or in a pantomine should be arranged. A small number of events can be taught so that each squad can be sent to practice an event. Time allotments should be arranged so that each squad does two or three events during the period.
3. A progression of learning for each event can be developed so that one or two important points are covered each day until the entire technique is learned. Each day one phase of progression for each event should be presented. The squads should be rotated so that every squad can practice this phase of the event. For example, a class of five squads could practice (a) the start for the dash, (b) the run and takeoff for the long jump, (c) the approach in the javelin, (d) the movement across the shot put circle, and (e) the steps to the first hurdle.

The next day additional techniques can be presented and practiced. This continues until each squad can perform satisfactorily all the techniques in each event.

B. Teaching progressions
   1. First week
      a. Warm-ups (jogging approximately 440 yards and vigorous exercises)
      b. Wind sprints (striding the straightaways and walking the curves)
      c. Warm-ups (jogging approximately 440 yards)
   2. Second and third weeks
      a. Warm-ups
      b. Starts
      c. Sprints (50, 100, and 220 yards)
      d. Hurdles
      e. Running long jump and high jump after completion of the hurdles
      f. Warm-down

3. Fourth week
   a. Warm-ups
   b. Middle distance (440, 600, 880 yards)
   c. Review long jump and high jump
   d. Warm-down
4 Fifth week
   a. Warm-ups
   b. Shot put, discus, javelin
   c. Warm-down
5. Sixth week
   a. Warm-ups
   b. Pursuit relays (440, 880 yards)
   c. Medley relays
   d. Interclass track meet
   e. Warm-down

V. Evaluation

A. AAHPER Physical Fitness Tests
B. Intersquad or intermural track meets
C. Observations
D. Written tests
E. Timing and measurements performed in class
F. Setting up minimum standards of performance in each event

Some Important Aspects of Track and Field Learning

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Women physical education majors, teachers, and coaches are compelled to improve their knowledge of how to teach track and field events and when to introduce various events to meet the needs of young superior athletes. No longer can the physical educator be content to present a variety of beginning skills to her students. The competent teacher must be able to handle the teaching of advanced skills as well as the general knowledge of physical education activities.

Coaching that is effectively done means that superior teaching is being done. One evidence of superior teaching is the utilization of good, logical, sequential progressions. This means establishing basic elements of skills and building on these basics.

The elements for learning track and field skills are the same elements required for learning motor skills. Important factors that influence this learning are: maturation of the learner, past experiences, motivation, interests, feedback mechanisms, intelligence, specificity of the task, and methods of practice.

Physical performance factors which underlie the action for the attainment of track and field skills are strength, endurance, coordination, speed, agility, balance, power, and flexibility. Children who have early maturation rates tend to have superior physical performance factors. The maturation level of a learner is a determinant of the contents of the track and field program.

The running, jumping, and throwing experiences that have already been presented to learners are important determinants of the formal learning experiences needed. Track and field activities are natural for children to perform both formally and informally and, consequently, are easy to include as part of the program.

Practical and interesting adventures in track and field that meet the psychological needs of the various learners are necessary for progression. Motivation will largely determine whether the necessary interest, effort, courage, and perseverance are to be realized. The social attitudes of the learner influence the child's interpretation of his personal needs. Track and field provides enough of a varied

offering of motor skills to allow for intra- and inter-differences found in children.

Feedback, or knowledge of results, can be provided as children are made aware of performances through graphic and photographic use of records.

It may be true that track and field has a great deal to offer to intellectually gifted people. Research reveals that the highly gifted seek outdoor activities in which they compete against themselves. The distance runner, the long jumper, the high jumper, the shot-putter, the javelin thrower, and the discus hurler are archetypes of individualistic beings who are constantly competing with themselves. Intelligence is a factor in performing complex motor skills, and it is true that superior track and field performers must make full use of intellectual ability; but it is also true that track and field serves well the persons of lower intelligence.

Specific track and field skills must be taught for superior performances to occur. Promoting, directing, motivating, and polishing are important aspects of good coaching, but careful teaching of skills is the most important aspect. The teacher must know just what are the components of good running and how to condition, train, and teach.

The length, frequency, and content of practice sessions are prime factors to be considered carefully by the teacher and coach.

Previous articles in DGWS *Track and Field Guides* have clearly stated the values of track and field for various age groups. Other articles have suggested what the track and field experiences should be for different ages. With the previous factors influencing the learning of track and field skills as a background, the following suggestions are offered as to what should be taught and when it should be presented.

Primary

1. *Movement exploration.* Through various problem-solving situations, children learn what they must do in order to start to run quickly and effectively so they can win the race, and how they must be strong and healthy in order to run longer periods of time.
2. *Exploring jumping.* Children learn how to leap, jump, and hop. They learn to clear barriers, transcend space, and exert a maximum effort so they can get their bodies high in the air. They

explore various ways of taking-off, controlling the body in flight, and landing.

3. *Throwing skills.* Young children learn how to propel and receive various objects. The use of yarn balls, various sizes of soft play balls, and bean bags, as well as more traditional projectiles, provide primary children with an opportunity to develop good throwing fundamentals.
4. *Stunts and self-testing.* This is a more formal approach that is readily accepted by the primary child as he tests his skill with and against other children. He likes to see if he can do it. He finds small successes as he works toward the accomplishment of more distant goals. The opportunity to develop accuracy as well as speed is provided in competitive situations geared to the physiological, psychological, and social needs of the young child.

Upper Elementary

A more formal track and field approach is planned for the intermediate child with much of the freedom of exploring movement still present. Indoor and outdoor activities should both be offered. Skill charts and record sheets can be used as evaluative techniques. A school meet or field day competition will provide a suitable means of culmination. The offerings suggested are:

4th	5th	6th
25-yard dash	Shuttle relays	600-yard run-walk
50-yard dash	75-yard dash	Softball throw
Spring starts	Running high jump	100-yard dash
Standing long jump	4th year offerings	Low hurdles
Running long jump		5th year offerings

Junior High

This is the time to increase participation in a variety of track and field skills and develop some depth of understanding and superior competency in certain selected skills.

The pursuit relay is introduced with attention focused on the baton hand-off and placement of team members. Girls learn the rules of competitive track and field, how to officiate, what constitutes violations, and the safe and correct use of equipment. Suggested offerings are:

7th	8th	9th
(2 to 4 wks.)	(3 to 4 wks.)	(3 to 4 wks.)
Dashes 50-75-100	Dashes 50-75-100-220	Dashes 50-100-220
Shuttle relays	Pursuit relay 440-880	440-yard run
440 pursuit relay	Hurdles	880-yard run
Low hurdles	Shot put	Discus
Running long jump	Running long jump	High jump (western roll)
High jump	High jump	Long jump
Standing long jump	Softball throw	Rules of officiating
Softball throw	Basketball throw	
Basketball throw		

Senior High

The track and field unit for senior high girls is largely elective with the girls actively involved in the planning of the unit, selection of activities, and determining of the amount of time to be spent on the unit. Girls should be introduced to distance running and longer relays, and be encouraged to perfect their own style in a selected event. The conduct and officiating of meets will receive additional attention as the girls are trained to assume the responsibilities and duties of officials. These are the suggested events:

10th	11th	12th
(3 to 5 wks.)	(3 to 5 wks.)	(3 to 4 wks.)
High jump (straddle roll)	Pentathlon	Elect 2 or 3 events
Discus	Cross-country	to improve skill.
Shot put	Officiating meets	Be able to officiate
Hurdles	Distance running	meets.
Dashes 50-100-220	Dashes	
Distance running 880-1500	Shot put	
880 medley relay	Discus	
Javelin	Hurdles	
Running long jump	High jump (own style)	

College Freshmen Service Classes

All events are introduced. Special consideration is given to conditioning and training. All girls try all of the events and then choose two or three on which to work for improvement. Girls organize their own relay teams and have a relay meet. An inter-class meet of all events is held with students officiating when they are not competing.

Physical Education Majors

The physical education major may or may not have had high school experience in track and field. To teach track and field skills and to coach and train for the development of advanced skills, the major needs a class devoted to these efforts. The diversification of track and field skills places stringent demands on the teacher and makes it necessary that she have an understanding and knowledge of many approaches to benefit the learner. The various throwing and jumping events are each highly specific and each contains its own diversification of styles.

It is imperative that the physical education major is taught the importance of safety measures and is carefully schooled in conditioning and training techniques specific to developing good performances. She must know the details of each skill and understand good teaching approaches for developing skills. An understanding of rules and officiating techniques should also be an outcome of the track and field class.

Track and field athletics has much to offer all learners whether they be the young primary child or the mature coach. The successful learning of track and field skills depends on careful planning.

Getting into the Big Time

VIRGINIA E. PARKER
Staples High School
Westport, Connecticut

"Dear DGWS: I have a girl in my gym class who is running the 100-yard dash in 6.5 seconds. With some advanced coaching and good competition, she should do quite well and is eager to try. What do I do now? I need help."

How many times do you suppose this situation has arisen? How much talent and desire do you suppose have gone undeveloped and unsatisfied because no one could provide the meets, money, time, and technical assistance required? Ideally, we should each be given the opportunity to develop any talent that we have—be it athletic, literary, musical, or other. So often though, a girl talented in track and field who is willing to make the necessary sacrifices toward excellence is unable to do so simply because she has no help.

First of all, where do you look for technical help? One suggestion is to look in your mirror. You are the best bet that this girl has early in her career, especially if there are no established track clubs in your area. This assumes that you are sincerely interested and willing to give your own time and effort. You have already established good rapport with your youngster and demonstrated your interest and enthusiasm for the project. This clears an important hurdle, and you can plunge right into the job at hand.

Chances are that you know only the basic elements of a few events. However, you are surrounded by a wealth of fine texts on advanced techniques and training programs. Certainly the articles in the DGWS *Guides* will make a good initial source, for they cover a wide area in the subject. Usually, the boys track coach will help you if he is aware of the seriousness of your purpose. Be sure to attend workshops in your area given by those who have attended the National Institutes on Girls Sports. If you have the opportunity to attend one of the Institutes, by all means do so. Numerous loops and films are on the market, usually concerning boys, but the techniques are essentially the same. If you can attend a topflight women's meet, take some 8 mm. films of your own for future use. Your movie camera will be a big help in analyzing your own girl's performances, too.

Facilities are a problem only for events with special requirements such as jumping pits or hurdles. As a teacher, you will undoubtedly have access to a track. The boys coach will most likely let your girl work out during his team practices. Once everyone becomes

accustomed to the idea, this will be very beneficial to her, for she may be able to run time trials with some of the slower boys. Even if your school is ill-equipped, your professional contacts will be useful if you approach the principal of a school whose facilities you wish to use.

After your girl has labored through her training program, she is ready to compete. This is sometimes a big problem, but there are several possibilities, none of them really easy.

First, there are school competitions. Inquire of the schools around you to see if they are having any meets. If not, perhaps two or more schools could organize an informal meet. This would involve more girls and perhaps uncover more talent. If the competition is school sponsored, be sure to check on eligibility requirements with your principal.

Second, recreation departments in many towns and cities run meets during the spring and summer. If girls events are not included, perhaps you can be a moving force in this direction.

Third, there are the Amateur Athletic Union of the U.S. competitions. Contact your association chairman, and he can put you in touch with clubs which run local meets. Although track activity is increasing, there are still many areas of the country that provide no competitive opportunities for girls, so travel to neighboring associations may be necessary. These associations usually cover several states. The AAU has meets on local, regional, and national levels as well as international. If your girl demonstrates potential and progress, AAU meets are a must, for perhaps you have a future Olympian on your hands. Your first step might well be to send for an AAU Rulebook which lists the associations and their personnel.

Who will foot the bill for all of this travel? Hopefully, your girl's parents can be of some help. Perhaps some school groups can also assist. If your girl is racing "unattached," that is, unaffiliated with an AAU track club that can help with expenses, then you will have to explore all other possibilities—bake sales, car washes, candy and toothbrush sales, etc. Put out collection canisters with the permission of local merchants. Prestige and security are enhanced by the establishment of a bank account in which donations may be sent to a bank official who is willing to act on your behalf. Solicit help from local organizations such as the Lions, Kiwanis, recreation commission, etc. Be imaginative.

Your success will depend greatly on extensive publicity, so contact your local news media. Try to map out your travel plans well in advance so that your publicity can include an estimate of the required funds. Post a progress thermometer with a cooperative merchant. Above all, don't be discouraged. You may be surprised how well the people of your community will back your project

when they know about it. Be sure to write thank-you notes; your young athlete should help.

Finally, develop a measuring stick for progress. Keep posted on meet results from other parts of the country. Don't worry about the winning times and distances; check third and fourth place results to see how your girl compares. This will be an index of when your girl is ready for the "big time." In the running events, you will notice a wide variation in times clocked in the distance events, for these are not yet as popular as the sprints. This may influence your event selection, depending upon the talent, endurance and interests of your athlete. Incidentally, do not depend on newspapers for meet results for they rarely appear outside the local areas. Subscribe to magazines such as *Amateur Athlete* and *Women's Track and Field World.*

Do these ideas sound like a lot of work and dubious results? Perhaps, but nearly *all* of them have been tried and found to be successful. They are, in effect, the story of the Westport Girls Track Team, an offshoot of the local high school team.

Just five girls performed in school meets with results that compared favorably with those in meets around the country. It seemed to be a good idea to try something more ambitions, so after the school season, they raced under the AAU affiliation of the local recreation commission, rather than forming a tiny club. The commission and the school helped with uniforms. The coach got her information from books, magazines, and DGWS *Guides* and boys coaches. The two local papers helped greatly with some extensive publicity. The girls raised considerable money from bake sales, flower pot collection boxes, and toothbrush sales. Several organizations and individuals contributed surprisingly large sums for our numerous trips, in addition to the assistance of the parents. The rest was just plain hard work from every person involved.

Some of the practices were held in a neighboring community which had the only composition track in the county. The girls raced in "local" meets in New York, Massachusetts and Delaware, and entered their first national competition in 1965. Performances were encouraging, so the project continued with greater efforts the following year. In 1966, these five girls placed ninth in the team scoring in the National AAU Senior Women's Championships in Frederick, Maryland. On the following weekend, these same girls won the National AAU Junior Womens Championship in Poplar Blubb, Missouri, the first time a championship team had been coached by a woman.

Since then, results have been less spectacular, but we are building with a new group and will try again. This venture took a tremendous effort, but these talented girls deserve the opportunity to try. Your girl deserves the chance, too.

Let Them Participate!

OLGA CONNOLLY
Santa Monica, California

Bar your students from track and field competition and you may rob them of a most unforgettable memory of their lives. By not letting your girls participate in athletic competition, you may fail to show them one of the most effective ways of channeling their overflowing energy. Deprive young women of the opportunity of conquering obstacles in sports, and you may fail to prepare them adequately for meeting life's challenges in today's complicated world!

This may seem too emphatic, yet I can recall exchanging ideas with many of our women physical education teachers who were hesitant about putting aside the old standards of judging the suitability of athletic competition for women. These discussions have shown the need for an up-to-date evaluation of the sport.

Thrills and Excitement

I do not exaggerate when I speak of the thrills track and field can bring to a girl's life. Imagine if Wilma Rudolph had been discouraged from putting on running spikes. The United States would not have had an international Olympic idol; the women's team would have been lost in obscurity; and little, if any, splendor would have entered Wilma's life.

If my parents had not allowed me to compete in athletics, Czechoslovakia would never have received its only gold medal in the 1965 Olympic Games, and I would never have won my greatest trophy, my husband. If I hadn't been encouraged and instructed on my way to the Olympic discus circle in Melbourne, Australia, I would never have met the American athlete who took me to a new home on the shores of California. I would never have experienced the happiness of having my young son, Mark, whose "Mommy, please bring me home a medal," gives me the sweetest stimulation for continuing to compete in my event.

Benefits of Track and Field

Before I became interested in sports, I was a rather week teen-age girl suffering, like many others, from unbearable dysmenorrhea.

When I began regular training my mother worried for fear that this condition might intensify. But our family physician said, "Let her try; it might be the smartest thing she ever did." He was right. Within six months all uncomfortable symptoms disappeared. I mention the condition purposely, since it represents one of the most common disturbances of feminine functions suffered by otherwise organically healthy young women. Any American school nurse can tell you about the number of girls who leave classes because of cramps. Extensive research has shown that 90 percent of these suffering females lead an almost sedentary life. Dramatic alleviation and sometimes a complete cure have been reached by simply performing systematic exercises, which improve the posture and circulation, stretch the contracted ligaments, and strengthen the supportive muscles of the pelvis.

Thanks to the physical fitness impetus, we are becoming increasingly conscious of the preventative value of exercise. But basic drills in calisthenics do not activate young people's fancy sufficiently to be a permanent answer in themselves. The youngsters may go along with what is good for them at school, but they will hardly continue their knee bends and push-ups during vacations and after graduation. Competitive sports have much greater appeal and serve as a very effective medium for delivering the message of the importance of fitness; dry calisthenics become much more desirable when performed as a preparation for an athletic contest. Track and field, the "Queen of Sports" as it is called in Europe, can be regarded as the basic and most well-rounded competitive activity. For years it has been studied by physicians and research people interested in physical medicine and sports. Every women's event has been thoroughly studied as to its physiological as well as psychological effects on the female. Specialists generally agree that track and field for women could be well recommended.

Why Not Track and Field?

While we in the United States are still dwelling on scientifically unfounded prejudices about track's "masculinizing" properties and its strenuousness for girls, the European girls are thriving (very femininely) in their physical education classes, where track and field has long been established as a basic activity. Moreover, a vast number of European clubs for men and women help interested girls to develop further and test themselves in competitions held nearly every weekend from the late spring until the fall.

On several occasions I have encountered the ridiculous argument that American women, because of their comfortable way of life, are potentially weaker physically than their European counterparts. I will never believe that our country, which offers the best food in the world, possesses the finest climatic regions for athletic activities, and the most up-to-date medical knowledge in the world, could ever produce an inferior species. I am convinced that bringing track and field into our schools would quickly dispel this degrading fallacy about the physical inferiority of our women.

Traditionally, the schools of the United States have served as the main stage of athletic activity for our boys. It is a good physical education teacher who strives to help his boys achieve the high level of balanced development necessary for a really happy, successful life. It is the school coach who discovers and guides the prospective champion. I believe firmly that our girls should have the same opportunities to follow in this unsurpassable pattern. Doing so, they can only profit—for more than one reason. Every track and field discipline requires the coordinated work of all systems of the body. Its individualistic character demands the concentration and self-reliance of each participant. Being naturally competitive, it not only stirs interest and imagination, but also teaches the young person to face and conquer personal challenge.

Extracurricular Programs

Just as logically, as track and field should become a part of our physical education curriculum, it should also be included in the after-school program for our more interested girls. The establishment of girls and women's interscholastic competitions would awaken the public to the discovery that American females certainly can do much more than merely strain their vocal cords at football games. Precisely as the Europeans did, our young women too would bring an immense amount of beauty and excitement to the Olympic sports.

Finally, our finest women stars would spring from their after-school contests just as our men champions grow from their early experiences with interscholastic meets. We should not underestimate the value of having fine international track and field representatives. Sport today is such a worldwide type of recreation that the nation's vitality is often measured according to the ability of its representatives in international matches, regardless of sex. Whether this kind of evaluation is justified may be questioned. But that fine international performances of women's as well as men's teams stand as a matter of national prestige, is irrefutable.

Track and Field Internationally

It is incorrect to think that our women could not measure up to such opponents as the Russians, who have dominated women's track and field for so many years. One needs only to realize that the Soviet supremacy originated from the fact that the USSR was the first country in the world to direct its special attention to women's sports. Today, with women freely engaging in athletic competitions in many other countries, the situation has changed.

In the 1962 European Championships, the total scoring showed the Soviet women's national team in second place behind Germany. In none of the events did the Russian girls take all three first places, as they had in previous years. In a few events they did not place at all. Even countries where women athletes used to be just as undernourished as in ours got their share of the laurels. Patriarchal Yugoslavia received its first medal ever in women's international competition, and Holland produced one gold and one bronze medalist.

The progress of European women's track is impressive, but not at all discouraging to our own efforts. We can study the work of European educators and apply their experiences to our own environment.

Once we introduce track and field to our schools, our girls will really discover what it means to be physically fit. Once we do this, we will not have to bow before anyone in any international competition. Let's follow the true spirit of our country, and ascend to more imaginative and effective ways of presenting physical education and track and field to our girls and young women!

Progress of a Miler

JOAN PEPPER
Tucson, Arizona

In 1967, Debbie Hancock, age 16, captured first place in the Junior Nationals in Miami, Fla. In 1968, she finished sixth in AAU National Indoor Championship with a time 5:13.1. In the United States Track and Field Federation Championships at Houston in June of 1968, she placed first. The Outdoor National Championships were held in Aurora, Colorado in August of 1968. Since this was an Olympic year and the mile was not yet an Olympic event, Debbie chose to compete in the half-mile instead of the mile. She finished fourth in the girls competition (14-17); and in the women's 800-meter event, her time was 10th best, good enough to qualify for the Olympic trials.

As a freshman in high school, Debbie had no plans to excel as a track star, but she did like to jog. In her first track class, her teacher told the girls to try to jog one additional lap every day. By the end of the six-week unit, Debbie was in fine condition and had developed some endurance. Her style of running was relaxed and easy and her form was good. The next class she signed up for was "conditioning." The girls had a strenuous workout every day, but one that was in accord with the principles of "gradualness" and "increase" of load. Debbie worked hard and further increased her strength and endurance. During her freshman and sophomore years, Debbie signed up for all the "track" and "conditioning" classes offered. She also went out for the girls recreation association team and competed in the long-distance event of that time, the 440. The next competition came in the advent of cross-country running for the girls. Again, an increased capacity of strength and cardiovascular endurance resulted.

Debbie began working out every day after school, most of the time by herself. Her cross-country coach worked out a program for her, which over the next two school years helped to develop her into a nationally-competitive miler. Initially, the coach put Debbie on "overdistance." She would run for ½ hour without stopping, each day trying to gain greater distance. After two weeks, she started on 110's. After warmup, she sprinted 110 yards 10 times, jogging back in between. At first she was only able to sprint this distance six to eight times, but later she was able to do the full workout.

The hard workouts were alternated with easy workouts, e.g., "jog easy for ½ hour or 40 minutes." Later, came the 220's; there were four – paced at about 35-36 seconds. The remaining 220 yards of

each lap were walked. Warm-downs of easy jogging of at least two laps always followed a hard workout. 440's were eventually added; the pulse was checked after each 440 until it recovered to 120.

The basic program was an alternation of quality work, sprints, with quantity work, overdistance. Occasionally, there were combinations, such as overdistance and running up hills hard, then jogging down. Sometimes there were 440's with sprinting the last 50 yards of each. Occasionally, there were five-mile runs through the desert. The workouts became progressively harder as Debbie developed her capabilities. The number of 220's increased to 10 at a pace of 32 to 33 seconds. The 100's increased to 20 at about 15 to 16 seconds.

Debbie worked hard and accomplished much in her four years at Rincon High School. She is a fine long distance runner and has many years yet in which to compete. The effort which she put into her training sessions and the dedication she continues to display will help her prepare for the mile event when it is included for women in the Olympic Games.

Conditioning and Training for Competition

NELL C. JACKSON
University of Illinios
Urbana, Illinois

O. William Dayton, head athletic trainer at Yale University, has summarized the effects of training and conditioning in one statement: "There are as many conditioning programs as there are coaches and trainers. We know that sports basically require physical strength, endurance, and skills. The better the condition of the athlete, the longer he participates; the poorer the condition of the athlete, the quicker he 'retires.' The individuals who are in good physical condition are the athletes who compose our teams today; the group lacking this physical conditioning falls by the wayside and they do not participate in athletics very long" (5).

Conditioning may be defined as preparing the body for activity, such as improving one's strength, endurance, flexibility, and speed. Training, on the other hand, may be defined as the process of adjusting to the competitive situation and improving in the skills in which the athlete is to perform (2).

Even though by definition the terms conditioning and training appear to be different, they are often used synonymously. For example, as an athlete undergoes certain physical movements in acquiring a skill, she also improves the quality of her muscles while using the same movements. Thus, while training she is also improving her condition.

From the coach's viewpoint, the problem of conditioning and training presents a logical sequence when preparing an athlete for competition. The body, as a machine, must be strong enough to overcome fatigue so that performance of skills will not be impaired. Theoretically, a person can be in excellent condition and still not be trained in any skill; on the other hand, she may be well trained to perform a specific skill but lack the physical capacity to complete or continue the performance for any length of time. For example, a girl may come out to track practice every day and receive the best education in track techniques that the coach is capable of giving. As a result, she is capable of giving a highly skilled performance. Her

mechanics of movement are refined to the utmost degree. However, if upon leaving the track, she continually violates hygenic habits, she will fail to perform well in competition. She may look like another Wilma Rudolph for the first 25 yards of a race, but she will find it difficult to maintain that pace over a longer distance without adequate conditioning; she will lose ground and come in last. True, conditioning requires months to achieve, but it can be destroyed within a few days. A sprinter reaches her maximum acceleration point about 50 yards from the start of a race. Therefore, the winner of the race will be the one who can maintain this speed (maximum acceleration) over the longest distance—or throughout the latter part of the race.

Some conditioning techniques may be used as training techniques and some training techniques may be used for conditioning—depending upon the sport. Because of this possibility, I have decided to use the terms synonymously; then you will be free to adapt the techniques to your immediate situation—for conditioning or training. When you consider the finer points of training, you will have to deal with each event separately because it is foolish to think that you can train a sprinter in the same manner that you could train a javelin thrower.

For many years, teachers and coaches have been constantly searching for the one conditioning and training procedure that would produce maximum efficiency in the shortest possible time. They have been putting popular training theories to the "test of experience." Many people would tend to agree with Roger Bannister that "training methods are likely to remain empirical because they are dependent upon more factors than it is possible to analyze at present." However, we must realize that there have been noticeable advancements in the efficiency of conditioning and training through the application of scientific data along with the accumulation of experience and tradition.

In recent years, the tendency has been to place more demands upon the athlete in regard to the performance of work. Not too many years ago, an athlete's fitness was thought to depend to a large extent upon regulation of his food, drink, and how much sleep he received. Undue physical activity was looked upon as a possible cause of energy drainage. Now, it is recognized that only through work, assuming that one has adequate rest and nutrition, can the muscular and circulatory systems develop to their highest capacities. Look at the records that have been broken over the years. Top U.S. girls, swimmers, and runners are faster today than the top men swimmers and runners were at the turn of the century.

Today we are indebted to the area of sports medicine because it has given us a more definite concept of the enormous adaptive possibilities of the body as a result of training.

Many physiological responses are altered by training and conditioning. Lucien Brouha has indicated that as a result of training, the improvement in each bodily system is on the order of 25 percent or less; however, when combined together, all of the effects may result in an improvement of the total performance which may be as high as 100 percent. Brouha lists these principal changes in the body through training:

1. An increase in the strength of the muscles and improved neuromuscular coordination.
2. A greater mechanical efficiency as measured in terms of lower oxygen consumption for a given amount of work. [With this there is improvement of the precision and the economy of any motion or sequence of motions involved in muscular activity.]
3. A greater maximum oxygen consumption.
4. A higher maximum cardiac output with less increase in pulse rate and blood pressure during submaximal exercise. [The heart becomes more efficient and is able to circulate more blood while beating less frequently. This greater efficiency of the heart enables a larger blood flow to reach the muscles, ensuring an increased supply of fuel and oxygen and permitting the individual to reach a higher level of performance.]
5. Improved pulmonary ventilation permitting adequate oxygen and carbon dioxide exchange for lower energy expenditure of the respiratory pump.
6. Quicker recovery in pulse rate and blood pressure after submaxial exercise (3).

Considering these physiological effects of training, it is essential that the performer be 100 percent fit when preparing for an athletic event.

General fitness is the foundation on which the structure of technical skills can be built. You cannot take too many shortcuts. An athlete who is not completely fit will never develop her potential and will be prone to frequent injuries.

The following principles should be employed in the best training methods:

1. The training load must be severe and applied frequently enough and with sufficient intensity to cause the body to adapt maximally to a particular activity.
2. Individuals react differently to the same training load. The most important consideration must be how the individual is responding to training without strain or whether the body is slowly losing its capacity to adjust itself. Therefore, training will always be an

individual problem. There are many factors which should be taken into account in drawing up a detailed schedule. Some of these factors include age of the athlete; time spent at everyday work and studies; athlete's physical makeup; time available for sleep and rest; training facilities available.

3. Exercises involved in training are only one of many stresses acting on the athlete. All stresses must be considered when appraising the effect on training. Psychological factors are very important in training because emotional conditions affect bodily functions and can be powerful agents of stress.
4. Too much stress on the individual causes strain, which lowers performance level. The signs and symptoms of strain are many and varied. Some can be felt and thus appreciated by the performer. Others can be measured.
5. Recuperation periods are essential both during a single training session and throughout the year. Rest, with consequent physical and mental relaxation, must be carefully blended with doses of exercise. A rhythmical cycle of exercise and recuperation should be established both within individual training periods and week by week.
6. Training is specific. Although there is a certain amount of carry-over, as a rule the best training for a particular sport is not of much use for another. Thus, swimming training will not help high jumpers—nor will fencing help basketball players. Carrying this concept further, we find that within a particular sport, training is specific. For instance, sprinters do not follow the same training pattern as middle distance runners. Every event requires special preparation.
7. Strengthening and flexibility exercises are very beneficial. These two types of training, carried out mainly in the off-season, should be carefully designed and directed at specific groups of muscles and joints.

Looseness and a high degree of flexibility means free-flowing movements. Great strength, brought about by resistance exercises, improves performance in many fields. Scientifically designed weight training with appropriate stretching exercises will not slow down the sportsman or cause a "muscle-bound" condition, nor will it cause bulging muscles on girls. I have found that girls working on a progressive resistance exercise program increase their strength 43 percent over a five-week period without any noticeable changes in the sizes of their muscles.

8. Interval training is one of the most important individual items in the modern training schedule. This consists fundamentally of rhythmically carrying out an activity from 30 seconds to 1 minute at fairly intense effort (but not all-out). Each exercise

period is followed by 10 seconds to 2 minutes of slow recuperative activity.

9. Nutrition plays a major role in physical performance. The first requirement in diet is a good variety of foods with as many as possible in their natural state. (4)

Today, there are three popular conditioning and training techniques: circuit training, interval training, and fartlek. All of these techniques are flexible enough to fit into the category of conditioning or training. If these techniques are applied correctly, they will improve strength, flexibility, and endurance.

Circuit Training

Circuit training is probably one of the newest training methods. Its appeal is currently so wide that it is being applied in principle to all forms of athletic activities. As a form of general fitness training based on sound physiological principles, it offers the kind of varied activities and continuous challenges which are attractive to large numbers of young people, many of whom show little enthusiasm for ordinary forms of physical training (7).

Circuit training develops muscular and circulorespiratory fitness. It applies the principle of progressive loading to a muscle. It enables large numbers of performers to train at once and at the same time by employing a circuit of consecutively numbered exercises around which each performer progresses, doing a prescribed allocation of work at each station and checking the progress against the clock. The number of exercises in the circuit varies with the time available, the equipment, and the requirements of the performer. However, there are usually 10 exercises.

The performer first learns all of the exercises in the circuit, then is tested on each one to obtain the work rate. After this, training on the circuit is encouraged until the performer can complete three laps at the training rate in a specified time, usually 15 minutes, and this is known as target time. As the performer becomes stronger, she increases both the number of repetitions and the quality of the exercise. The number of circuits remains at three.

There are some controversial exercises that you should be aware of and treat accordingly. When planning a conditioning and training program, the deep knee bend and duck walk, which have been used traditionally as training activities for sports, are now generally disapproved by medical authorities. Both exercises have a potential for serious injury to the internal and supporting structures of the knee joint.

In the deep knee bend, the athlete moves alternately from a standing position to a full squat; in the duck walk, she travels about while trying to maintain the full squat position. Both exercises involve complete flexion and often twisting of the knee which can result in cumulative deterioration or immediate injury to the meniscus (cushioning cartilage) of the joint. The incidence of such mensical injury following the use of these exercises is sufficient to warrant dropping them from the training program (1).

Many other exercises, not carrying the same injury hazard, are available for athletic conditioning. These can be found in many references on fundamental conditioning exercises and athletic training procedures.

Fartlek (Speed Play)

Fartlek is free, relaxed running. It is done on a soft surface over an area that permits a great deal of uphill and downhill running. It is a combination of great quantities of easy running interspersed with fast sprints and periods of resistance running up hills. This is the way young children play and develop. There are periods of hard play (running), then periods of rest when they feel tired—a continuous cycle of activity.

The running is done on terrain away from the track in a cross-country environment. Specific intervals are not necessary, but the following schedule should be included:

1. Easy running from 5 to 10 minutes
2. Steady, fast running
3. Easy running with wind springs of 50 to 60 yards
4. Rapid walking for about 5 minutes
5. Uphill running
6. Maintain a fast pace for about one minute.

Interval Training

Like all training methods, interval training expanded empirically. The practical interpretation of interval training seems simple. The performer is required to run at a reasonable speed, over a fixed distance. This run is repeated after a short recovery interval; repetitions are limited in number. There are four variable situations in interval training: (a) the length of the distance (100 yards, or 1 or 2 laps around the gym); (b) the chosen speed (pace—¾ of maximum effort); (c) the duration of the recovery interval (1-5 minutes); and (d) the number of repetitions (6-10).

The athlete is constantly running shorter distances at a faster speed than her competitive pace and/or longer distances at a pace slower than her competitive pace.

Interval training may be used by all participants in the track and field program. Here are examples of interval techniques:

Distance (to build endurance)—The distance should be long enough to create stress within the runner. Determine the distance to be run, then fix the time. Example: 440 yards in 90 seconds or 220 yards in 40 seconds. Alternate with slow jogging: repeat as many times as possible, or fix the number of repetitions.

Speed—The runner increases the speed over a designated distance that is within her ability to repeat. Example: 220 yards repeated 6 times at 30 seconds—allowing rest between each run.

Number of repetitions—The number of repetitions depends upon its basic intended value or purpose. There is no magic number or answer. Some coaches will build up the overall repetitions to equal 2½ to 5 times the total competitive distance.

Rest or recovery period—The recovery interval is gradually reduced as training progresses. Example: 6 x 220 at 30 seconds with decreasing periods of recovery. Other interesting combinations of techniques include the following:

1. *Use of sets.* Two to six runs in each set; 3 x 220 at 30 seconds with 3-minute recovery interval followed by jogging for 10 minutes; then the set is repeated again.
2. *"Follow the leader."* Have groups of four or five run in a line around the track. The pace of the run is determined by the first runner. The last runner moves up after each lap and becomes the leader (pace setter).
3. *Wind sprints.* Repeatedly run sprints (30-150 yards) over a short distance until winded (picking up speed along the way).
4. *Ins-and-outs.* Alternate fast 100's with slow 100's.
5. *Back to back.* Repeatedly run sprints over a short distance; walk back to the start and repeat until winded.
6. *Continuous relay.* Assign eight runners to pass the baton together. Each person will run 50 yards, then pass off. This is repeated several times before stopping.
7. *Medley relay.* Pace work—two teams are paired in terms of ability. Each pair is told to run a designated distance in a given time. Example: First pair will run 100 yards in 13 seconds; second pair—110 yards in 15 seconds; third pair—220 yards, 27 seconds; and fourth pair—440 yards in 60 seconds.

Basic conditioning and training for jumping and throwing events will not vary too much from the above for running events—that is, exercises and forms of running will be needed. Jumpers need to build up their legs. Therefore, they should do a great deal of

running, including pop-ups (short runs with high jumps). However, special emphasis is given to effieiency of skill and style as well as speed; so jumpers will work on approach, body position in the air, and landing techniques.

Throwers will have the usual warm-ups, including exercises and jogging along with some sprinting. Participants in these events spend their time on (a) preliminary throws for form (easy putting); (b) throwing or putting with meet momentum for form (not distance–concentrating again on technique); (c) throwing or putting for form and condition; and (d) working on other events or exercises with a deliberate attempt to build up coordination, speed, and strength.

Training programs for runners, jumpers, and throwers are arranged to allow for time trials, jumping for height or distance, throwing for distance a limited number of times–usually once or twice a week.

As mentioned earlier, there are many systems of training. Bill Bowerman of the University of Oregon has developed a useful method of integrating the various systems into one guide in developing a training schedule. Each month you determine a pace goal. All relative workouts are done at this pace. Within each month, there is a variation in the overall mileage covered.

The following suggestions may be used as a guide for daily training and conditioning combinations:

1. Daily practice schedules may be based on one hour of concentrated work, spread over 1½ hours.
2. Work dosage for middle distance runners should equal 2½ to 5 times the actual competitive distance.

A well defined conditioning and training program supplemented with running will pay rich dividends in improved muscle tone and body strength. Emphasis should be on developing strength, endurance, and flexibility. You should not concentrate on one area of the body but try to cover all areas–arms, legs, abdomen, and back. At the same time you should not be afraid to overload the work.

The relationship of psychology and training cannot be overemphasized. Following are excerpts from an article written by Gabriel Korobkov, coach of the Russian Olympic track team.

The performances of the Soviet track and field athletes in Tokyo left a bitter feeling of dissatisfaction in the coaches of the Soviet team. In spite of the many efforts made in the pre-Olympic training, we became runners-up.

Unfortunately, we failed to notice in good time that this year the Americans got down to business and ceased making the organizational and methodological mistakes which they had in their 1960 preparations.

What are we to do now? We should revise completely the organization of our work, our organizational and methodological positions, and tackle

radically the job of raising the level of training our track and field athletes–not only of the national team, but all over the country.

Many of our athletes who had shown excellent results in general physical training could not put their abilities to full use for the sole reason that we did not combine general physical training and psychological coaching.

Coaches do not devote enough attention to the psychological training of the athletes. They do not know how to unburden the athlete before the competition and relieve him of the psychological pressures. This problem becomes particularly acute when one has to deal with such favorites as Czolina, Luse, and others (8).

Any sound approach to training for competition regardless of the sport must plan deliberately and specifically for the mental factors as well as the physical factors. Ken Doherty has said:

> Man is not an isolated entity in an antagonistic nature. Rather he and Nature are one; he is in Nature and in no sense can he be apart from or other than Nature. His problem then in all his strivings is to lose self-awareness in an isolated sense and to realize his essential oneness within and without. To take a related example, one might view the awesome power of ocean waves as a conflict between wind, water and shore. But a more holistic and scientific attitude would see them as a perfect natural interrelationship and interaction between the aspects of a single whole (6).

This is training and conditioning in the best sense, giving consideration to the physical and the psychological aspects of man. The most important factor in a program of training is to be able to achieve physical and psychological readiness when your schedule indicates if you should and when the big races indicate you must.

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Physiological Aspects of Competition for Women

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A current problem in modern sports for women is whether or not the effect of competition is physiologically different in women than in men. There are probably as many old wives' tales told about the dangers and pitfalls of competition for women as the sum total of fairy tales written.

The author believes that the two sexes are more alike physiologically than they differ in the areas most important to training and conditioning of the body for athletic competition. Women are too concerned about being different and often feel that the training techniques used successfully by men do not apply to or will not work for them. A well-functioning body, be it male or female, is the basis for success in any athletic performance. The functioning efficiency of the body helps determine its good performance. Isn't the female body composed of the same nine basic body systems as that of the male? Regardless of the sex of the competitor, it is muscles, nerves, lungs, heart, and blood vessels, etc. that must function at maximum level when training and competing.

Some of the effects of training and conditioning are as follows: a lower resting heart rate; lower oxygen utilization for the same amount of work; greater oxygen uptake capacity and oxygen debt tolerance; an increase in heart volume, blood volume, and total amount of hemoglobin; and an increase in strength, endurance, power, and flexibility. The extent to which the body makes any or all of these adjustments depends on the demands of the sport and the particular event for which the athlete trains; however, research indicates that these changes have been observed in female as well as male athletes.

Competition During Menstruation

Should women compete during the menstrual period? Let us note that menstruation is a normal female physiological occurrence. The opposition to participation in vigorous physical activity during this

time is based mostly on myth, and not fact. There is ample scientific data to disprove most of the taboos and negative attitudes. It is clear that women have trained and competed during the menstrual period and have done so successfully without harming themselves or adversely affecting their potential for motherhood.

The whole menstrual cycle is controlled by the female hormones, estrogen and progesterone. Approximately 35 ml of blood and an additional 35 ml of serous fluid are lost during the cycle. There is also a loss in iron of about double the daily average. Numerous investigators report edema, increased body weight (two to seven pounds), increased thirst, and a decreased urinary output in women prior to the menstrual period. There is a complete reversal of these symptoms after onset of the period. These changes occur in 25 to 30 percent of normal subjects, besides occurring in those complaining of edema. Regularity of the menstrual cycle is not established until after many cycles, frequently 20 or more. Progesterone is responsible, both for retention of salt and fluid, which causes premenstrual tension in the week preceding menses, and for menstrual cramps.

Research

In P. Karpovich's *Physiology of Muscular Activity* (1953), he states that there is no evidence to prove that participation in athletics during menstruation is harmful. Jokl says that "the statement that we should not give heavy exercise to girls in the first months after onset of their first menstruation is equally unjustified." He continues: "Training entails no greater risk or damage for young people; this is a fairy tale."[1]

In 1959, the Research Committee of the DGWS conducted a special survey to obtain the medical opinions of eight gynecologists and nine women physicians on sports competition and exercise for women during the menstrual cycle. Results showed that for girls and women who are free of menstrual disturbances, the large majority of doctors placed no restrictions on physical activity and sports competition during any phase of the menstrual period. Many of these doctors emphasized the desirability of exercise and the possible psychological aspects of menstrual discomfort. A typical outlook was that menstruation is a "normal, natural process and that all pain and stress are caused by the individual's psychogenic reaction." (Congenital abnormalities and inflammatory diseases are

[1]Ernst Jokl and E. Simon, *International Research in Sport and Physical Education* (Springfield, Ill.: Charles C. Thomas, Publisher, 1964), p. 598.

exceptions.) Other statements regarding exercise were that "no undue consequences of physical activity have been observed; usually it is beneficial" and "activity *may* very well be therapeutic in that attention and thoughts are directed to an outside activity."[2]

As early as 1929, Dr. Harnik emphasized that girls and women ought to be trained in regard to menstruation as an entirely normal process and to behave exactly as usual, never considering it an illness or indisposition. Dr. Harnik reports that research done over a period of 25 years on a vast number of women (several hundred, 134 observed closely) in Israel and Austria revealed that no harm had come to women who continued to do everything they usually did during the menstrual period; on the contrary, a great number of women got rid of dysmenorrhea and also became freed of the inferiority complex caused by painful menstruation.[3]

In a thorough study of 729 Hungarian female athletes, Dr. Erdelyi reached the following interesting conclusions:

1. Up-to-date heavy training and competition did not delay the onset of the menarche of the female athletes.
2. 65% of the athletes tested did not show any change in their cycle from intensive training; 5.6% noticed favorable changes; and approximately 10% showed unfavorable changes. Dr. Erdelyi did not believe this 10% group significant, since just as many unfavorable changes can be found in a control group over a period of years.
3. About 48% of the athletes did not show any change in their sports performance during their menstrual period; 13-15% showed better performance; and about 33% exhibited poorer performance than usual.
4. Women demonstrated optimum skill and strength in the postmenstruum period as well as optimum muscle tone and ability to perform. Best performances were noted in the postmenstrual phase.
5. Poorer performance during premenstruum may be explained as due to partly nervous and partly hormonal symptoms: irritability, lack of stamina, depressive moods, and water retention.
6. In some instances, the unusual appearance of a vaginal discharge or the unfavorable change of the menstrual cycle could be considered a sign of overtraining or overstrain of the female athlete, but only after excluding all medical or gynecological causes. In the

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[2]Marjorie Phillips, Katherine Fox, and Olive Young, "Sports Activity for Girls," *Journal of Health, Physical Education, Recreation,* 30 (Dec. 1959), p. 25.

[3]M. Harnik, "Sport and Menstruation," *Proceedings of the Second National Conference of Sport and Health* (Oslo: The Royal Norwegian Ministry of Education State Office for Sport and Youth Work, 1952).

majority of the poorer performance cases, pathological factors can be found to be responsible for these conditions rather than the sports activity.

7. Female athletes generally are ready to accept the responsibilities of marriage and motherhood.

8. Complications of pregnancy occurred in a smaller percentage of female athletes than of nonathletes. Predicted miscarriages did not exceed the average percentage found for nonathletes. In the cases studied, proof of harm could not be attributed to sports participation during pregnancy.

9. The complications of labor and delivery did not exceed the usual number; in fact, the need for a Caesarean section was 50 percent less than in the control group. The duration of labor was shorter than the average for 87 percent, especially the duration of the second stage. On the average, it lasted only half the time required by the control group.[4]

Dr. Erdelyi studied 184 cases of pregnancies and deliveries among women athletes, and she could not prove any harmful effects of sports participation on pregnancy. There are well documented instances in which pregnant women have competed and won championships. Thus one can see that it is possible for pregnant women to continue activity in athletics, even in competitive athletics.

Dr. Ryan writes, "Those who are interested in teaching competitive athletics for females should probably be less afraid of the stress or strain to which they are subjecting the girls or women than they have been in the past. Women who are normal as far as their health is concerned are capable of undergoing much more stress and much more effort in competition than they have been subjected to anywhere until this time."[5] He believes we need not worry about putting too much stress on girls and women because we haven't even begun to approach the limit yet.

This writer is in agreement with the above. Women are capable of much more than they are doing in sports competition. The recent records set by women are the result of strenuous training rather than of sheer natural ability.

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[4]Gyula Erdelyi, "Women in Athletics," *Proceedings of the Second National Conference on the Medical Aspects of Sports* (Washington, D.C.: American Medical Association, Nov. 1960), pp. 59-62.

[5]Allan J. Ryan, "The Consultants Answer Questions," *Values in Sports.* Report of a national AAHPER conference (Interlochen, Michigan, June 1962), P. 81.

Menstrual Displacement

In the opinion of the author, to compete or not to compete during menstruation is no longer a problem. It is being done without adverse effects. The current problem confronting women in sports appears to be the issue of displacing the menstrual cycle to enable the contestant to be in the most favorable phase of it when participating in a particular event. Menstruation can be delayed by taking hormones in the form of small tablets on definite days of the cycle. Consequently, the possibility exists of extending the premenstrual phase and of displacing the time of ovulation.[6] There are medical objections to this, however. Also, attempts to exert hormonal influence on the menstrual cycle to increase performance in sports could be classified as drugging and is therefore sometimes objected to on moral grounds.

Body Type

Another controversial aspect of competitive sports for women is the belief that women engaged in training and competition acquire masculine physiques and characteristics. Who is to say what is masculine and what is feminine? One's body build is inherited, and it is known that mesomorphic characteristics contribute much to success in sports. There appears to be a definite relationship between success in sports and body type. The woman who excels in a sport does so because she was endowed with a body that responds well to training, and this enables her to perform with great skill. She has chosen the sport on the basis of what she is; the sport will not make her develop a body type for which she does not have the genetic basis. Sports competition and the training it demands benefit a girl or woman by developing her body to emphasize its beauty, especially in movements that involve poise and grace.

Sex Differences and Records

Certainly there are a number of differences between male and female in regard to sports that need to be considered when a comparison of their ultimate achievements is made. Many people wonder when and if performances of women will ever equal those of men.

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[6]E. J. Klaus, "The Athletic Status of Women," in *International Research in Sport and Physical Education*, edited by Ernst Jokl and E. Simon (Springfield, Ill.: Charles C. Thomas, Publisher, 1964), p. 591.

Because of the shorter bones, narrower shoulders, relatively wider hips, smaller proportion of muscle tissue, less responsive muscle fiber, smaller thoracic cavity, smaller heart, and a number of metabolic and hormonal differences, it can be seen that the biological potential of the female sex does not make it reasonable to compare her performance with those of men. But, then, this topic appears to be of greater concern to journalists and spectators than to the women who compete. Women are not trying to equal or surpass records of men. Their prime concern is enjoyment in participation and doing the best with their natural endowments. Some of the enjoyment lies in breaking old records and setting new ones. New records will continue to be set because techniques are improving, training is approached more scientifically, nutrition has improved, and each generation is becoming heavier, stronger, and taller than the past. Enough good track and field information is available so that every woman competitor should know how to train and perform properly. It is up to women to make full use of this information, for the mechanical principles underlying top performance of each skill are known. As women become adept at using the training methods that have worked so well for men, they will progress to set new records.

Distance Running for Girls and Women

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There is no evidence that distance running harms the healthy individual who has become conditioned by progressive exercise. The fatigue mechanisms of the body protect against dangerous exhaustion. Competitive running will motivate an individual to exceed one's normal limits for exertion, so there is a difference between running and running in competition. An arbitrary limitation for competitive running is necessary, and the distances proposed by the Division for Girls and Women's Sports of 440 yards for junior high school girls and 1,500 meters (or 1 mile) and 1½ miles cross country for high school girls and college women are reasonable.

More significant than the distances in safeguarding the health of track field competitors are medical supervision, proper conditioning and good coaching. Medical supervision should include both preseason medical evaluation and day-to-day observation of health and vitality. A conditioning program will require, at a minimum, three or four weeks of preparation for the first competition to develop necessary endurance and skill.

The above opinions are approved by the American Medical Association's Committee on Medical Aspects of Sports.

Training Methods for Jumpers and Runners

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Jump Training

Jump training could very easily be called circuit training. It is a method of getting the resistance training necessary for the development of the runner and especially the jumper. Listed below is a sampling of various stations that may be set up. They require very little equipment or space.

1. *Spring over bench.* Spring up with legs rather than lift legs in back. Feet should be together. Spring over from side to side. (Regular dressingroom benches may be used.)
2. *Run the steps.* If regular gymnasium bleacher steps are used, run two steps at a time. Concentrate on lifting knees high and pushing off of back foot. The number of times they should be run depends on the number of steps.
3. *Straddle bench jumps.* Spread legs to straddle bench. Spring up, landing with both feet on the bench, then immediately drop down. Repeat without pause.
4. *Push-ups.*
5. *Spring up steps.* Keeping feet together, spring up three steps at a time. Use arms to help lift. The more experienced athlete may be able to spring up on one leg.
6. *Sit-ups.* Use the conventional sit-up, or in a supine position, place hands on thighs. Slide hands down thighs toward knees, not allowing small of back to rise off floor. Repeat rapidly.
7. *Leg lifts.* Assume sitting position, legs together and straight. Raise legs (feet together), move from left to right and right to left (maybe over an obstacle). Repeat. Do not allow hands to touch floor.
8. *One-leg small hurdle hop.* Place four to six obstacles 3 to 6 inches off the floor just far enough apart that the athlete can hop on one foot over each obstacle without taking an extra step between them.
9. *Hurdle spring.* Spring over hurdles, feet and legs together. Do not take an extra step in between.
10. *Overhead ladder.* Walk the ladder hand over hand.

11. *Any weight-training lift.*
12. *Standing broad jump.* Spring for distance.
13. *Single-leg squat.* With weights on shoulders and one foot on side horse, rise up on toes. Dip and rise again.

The above exercises can be set up in various stations on a circuit. Move from one station to the next continuously until circuit is complete. Rest, then repeat.

Helping Young Hurdlers Learn Form

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The observations, coaching hints, and analysis of hurdling form presented in this article have evolved from years of experience working with boys. There is a difference between low and high hurdling form. The descriptions in this article pertain to high hurdling form for boys. The author feels, that with young girls, the hurdling form for the 2'6" hurdle will compare to high hurdling form for boys. As the girl matures and grows taller, correct form will compare more with low hurdles for boys. Readers should keep this in mind when using the material presented below.

Start

Prospective hurdlers should be allowed to start as sprinters. In other words, they should run the distances several times without the hurdles. The next step in the learning process is to place a mark at a point about six feet from where the first hurdle will be placed. Allow the youngsters to run without hurdles but determine which foot lands on that spot. If the take-off foot lands on the marked spot, no changes in the start will be necessary. If the learner has the wrong foot landing at the take-off point in front of the hurdle, some adjustment must be made. First, an attempt can be made to have the prospective hurdler switch the feet in the blocks. This should change the foot that lands on the hurdle take-off mark. If this fails, then try to have the hurdler "chop" the first two or three strides because the last strides should be full length. The take-off point from the hurdle might vary for girls according to size, maturity and experience from 5'0" to 6'6".

The author recommends that beginners be encouraged to wear warm-up uniforms while learning. The spills are less painful and thus, discouragement is avoided.

Take-off

One of the most effective word images is to tell the hurdler to "dive at the hurdle." This will aid in getting the head and shoulders forward and down. This in turn will keep the hurdler from going up in the air. The author recommends that the arm opposite the lead leg

be extended forward. Shoulders should be parallel to the top of the hurdle when it is cleared. Coaches should be sure the hurdler does not duck either shoulder forward. The lead leg should be lifted straight up and the lower leg extended. Coaches should insist on a "high, prancing step," that is, the thigh should be lifted and then the lower leg should be extended. A take-off position too close to the hurdle will cause a hook in the leg or an attempt to bring the leg to the side.

Positioning of Body

As the runner clears the hurdle, the position of the head and shoulders down to the thigh should be stressed. The chest should be two to three inches from the thigh. The author is against telling the athlete to think about barely clearing the hurdle or telling her to think in terms of knocking some small object off the top of the hurdle. This often causes the hurdler to hit the hurdle during a crucial race and, although not illegal, usually causes the loss of the race. Emphasis, instead, is on getting the upper body down toward the thigh. This will keep the hurdler low.

The trailing leg should be brought through in a normal running stride. About the best way to achieve the learning necessary for correct position of the trailing leg is to use the hurdle exercise (sit in hurdle position and reach on the ground over and over). Have the athlete learn to sit upright in this position; that is, she should sit without supporting the body with the hands, and without a lean to the side. While sitting in this position, the athlete should snap the head and shoulders forward and extend the lead arm to a position about four to six inches to the side of the lead leg. Do not allow the athlete to touch the foot with the lead arm because this will cause the shoulders to turn.

Landing

When the lead leg hits the ground it should be behind the center of gravity of the hurdler; that is, the forward lean should be such that the lead leg is behind the center of gravity. This lean will enable the hurdler to make a full stride with the trailing leg. The hurdler must land on the ball of the foot, not the heel.

This first step with the trailing leg is undoubtedly the key to achieving the three strides between hurdles rather than five. As an aid to achieving this full stride, a mark may be placed on the track or a tape mark on the floor. This mark gives the hurdler a point to aim for on the first stop after clearing the hurdle. It is essential to have

someone watch the hurdler perform and mark the actual length of the first stride with the trailing leg. In this way, the hurdler becomes aware of how far her stride is short of the mark. For a rough guide to the average length of each stride see Figure 1. This is intended to be a guide only and will need to be adjusted for the individual hurdler. The first stride with the trailing leg must be five feet long and the middle strides both five feet, nine inches. This would place the hurdler on take-off about six feet from the next hurdle.

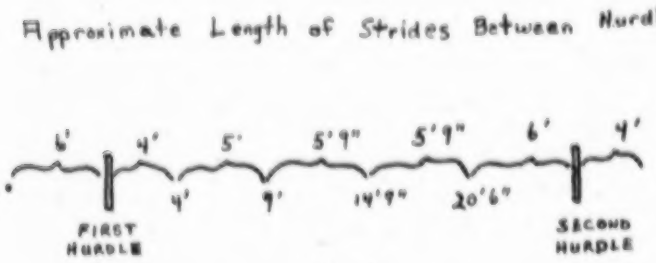

Figure 1

Body Lean Emphasized

As the body goes over the hurdle the trunk should lean forward. The shoulders should be parallel to the top of the hurdle with the head in position to look at the next hurdle. The lead arm should not cross the body as this will cause the shoulders to twist, which in turn causes a balance problem.

One exercise the author has found effective in helping hurdlers accomplish the extensive forward body lean is to have them put the heel of the lead leg on top of the hurdle and dip the head and shoulders almost down to the thigh. The parallel position of the shoulders and the correct arm and head positions can also be emphasized as the girl works with this exercise.

Weight Training Principles

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There are many misconceptions regarding the woman athlete who is strong and flexible and demonstrates a high level of local muscular endurance as well as as cardiovascular endurance. Most of these fallacies center around the trite and very commonly misused terms "femininity" and "masculinity." What many lay people and some men and women physical educators fail to understand is that these terms have their primary bases for definition purposes in the psychologic area, not in physiologic and anatomic constructs. As one observes women in all types of sport, it is a well-demonstrated fact that the stronger, more flexible and better conditioned athlete moves and performs more efficiently than her counterpart who does not have these attributes. It is also obvious that the better conditioned women athletes of today derive great enjoyment from their participation in sport, and these ladies in particular bring an aesthetic quality to sport through their grace of movement and appearance. The terms "femininity" and "masculinity" are irrelevant when reference is made to conditioning of athletes. Weight training will not change the sex and/or psychologic matrix of an individual, but it does increase strength, flexibility, endurance and the potential of the individual to excel in her particular sport specialty. Therefore, there is no justification for omitting weight training in preparing girls and women to compete in athletics.

When a physical educator gives an exercise program to any group of students, she should have a thorough kinesiological understanding of the exercises. There must be a basic logic underlying a weight training program, i.e., the coach must know what she is trying to accomplish and *why* she is subjecting her athletes to a particular regime. The biggest mistake a coach can make is to select some weight training exercises at random from a book because they "look good."

The first question which should be asked is: What factor should be given primary attention? Strength? Local muscular endurance? Flexibility? Cardiovascular endurance? Skill development? Some of these factors, of course, can and should be developed concurrently; however, the main emphasis will usually be placed on strength or endurance depending on the type of sport in which the girl plans to participate.

The following principles should be used as guides to planning the weight training program: (1) if strength is the primary consideration, maximum weight for 8-12 repetitions should be used; (2) if local muscular endurance is the basic objective, the weight load should be reduced and maximum repetitions should be done; (3) flexibility can be improved in any articulation by movement through the complete range-of-motion of the joint on each repetition; and (4) weight training is not the most efficient method to develop cardiovascular endurance—long distance running should be used in addition to weight training.

Some physical educators are concerned about overworking athletes in a weight training program. It is very difficult to overwork a human being who is weight training because of the nature of the activity! Consequently, weight training can and should be done 5-6 days per week during preseason conditioning *and* in season. Some coaches alternate activities by days to reduce the boredom factor, but the trained athlete will have no adverse physiologic after-effects from daily weight training.

The coach should spend considerable time teaching proper lifting techniques, body mechanics, and breathing procedures. Lifting should be done according to the best kinesiologic principles to avoid injury. Breathing should be done as normally as possible to eliminate the possiblity of the occurrence of the Val-Salva mechanism.

The basic exercises in any weight training program should be designed to work the antigravity musculature. This is a major principle of weight training. The weight training program must include exercises for the: (1) triceps surae, (2) quadriceps, (3) "hamstrings," (4) gluteus maximus, (5) erector spinae and (6) abdominals (vertical stability). It is very important to give special weight training consideration to the antigravity musculature because these muscles serve vital movement and postural functions during athletic performances. Well conditioned antigravity muscles serve as a foundation for sport skill development.

It is believed that weight training will be most beneficial if the musculature is overloaded at the specific joint angles through the precise plane-of-motion and through the exact ranges-of-motion actually used in the sport.

Traditional weight training exercises utilize movements primarily through the planes-of-motion based on the anatomic position. From an athletic standpoint, this is very unrealistic. For example, some coaches advocate the military press as one exercise for shot putters. How many shot putters put the shot at an exact verticle plane to the earth? The answer is none! A shot is put through a *diagonal plane!* Consequently, it is more logical to have the shot putter use the "specifics" concept of weight training. This would mean that the

shot putter should be: (1) placed on a weight training program emphasizing strength, (2) instructed regarding general antigravity weight training exercises, (3) cinematographically or visually analyzed regarding her shot putting style and (4) prescribed specific resistance exercise through the diagonal plane, joint ranges-of-motion and at the precise joint angles she uses during the putting of the shot. Thus, the weight training program should be prescribed for each athlete individually.

The athlete should work on skill development concurrent with weight training. It is a mistake, especially with athletes involved in accuracy skills, to disregard individual skill development while gaining strength, endurance, and flexibility. It is recommended that a daily workout program include weight training and skill drills. This is important because it allows the athlete the opportunity to adjust her skills gradually to anatomic and physiologic changes occuring as a result of weight training.

As women's athletic competition continues to grow, it is very important to condition the athletes by using the best and most scientific techniques available, including weight training. Coaches must be cognizant of the latest trends in weight training because they must have a logical rationale for the general weight training program and for the specific aspect of conditioning prescribed for each athlete. When weight training is used properly, it will raise the potential skill level of the athlete in her sport.

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Spicy Practice Sessions

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After a long period of conditioning and training for the track season, including the pre-season and early season, many athletes hit a mid-season drag. When your charges start showing signs of boredom or become lackadaisical during practice, they may need a change. This is the time to put a little spice in practice sessions by trying variety.

A break from the regular practice routine may be just what is needed to keep the team alert and interested. There are several methods which deviate from the usual daily preparation of the coach. However, the dividends returned in the form of team enthusiasm may well be worth the additional effort.

Various relay situations can be used which will liven up practice. A practice session may be ended by dividing the entire squad into four-member relay teams with each team composed of one jumper, one thrower, one distance runner, and one sprinter. The coach determines what distance the relay shall cover, with each member running equal distances, based on the ability of the person involved.

A cross-country type relay will provide a change and set up a competitive situation. The squad may be divided into two equal teams for running the cross-country course. Each runner should be given a specific distance to cover, and overall, both teams should cover equal distances.

Continuous relays form a different and interesting way to develop endurance as well as to provide a competitive situation. As many four-member relay teams as desired may be selected. Each team member should run one lap of a 440 track and hand off to the second leg runner and so on. When the fourth leg (anchor) runner comes to the exchange zone, she will hand off to the lead runner. This relay process continues until a predetermined time has elapsed.

This type of endurance work can be varied by runners exchanging the baton every 110 yards continuously. It is necessary to include a fifth runner who receives the baton in an exchange zone at the starting line and continues the relay process. The relay continues for an allotted time.

Another variation is to have the athletes draw their workout program for the day from a hat or container. All sprinters would draw from one container, long jumpers from another, etc. All workout sheets for the same event would include a variety of

activities to accomplish the same results. Establishing a mileage club on the team is another means of adding incentive and variety. For example, if a 100 mile club is set up, the girls accumulate the distance over a specified period of time, either during practice or on their own. A large chart, posted in the locker room or other prominent area, would be an incentive. For every 5 or 10 miles run, the girls mark their own progress on the chart.

A change of scenery is sometimes helpful. The team can practice at a nearby park or a walking trail. If there is a college in the area, it may be possible to obtain permission to use the track and field facilities once or twice.

When timed endurance runs are scheduled in the daily practice program, a score clock or pace clock may be used. If the girls are to run for 10 minutes, they can pace themselves by seeing the remaining time they have to run.

These are some suggestions which may help keep a high interest level on the team. All of these may not work in your particular situation or with your group of girls; however, some of these and others you devise, will help add a little spice to practice.

Athletic Injuries

D. M. EUBANK

Last fall Laurine Mickelsen and Alberta Cox asked me if I would talk on athletic injuries at this Fifth National Institute on Girls Sports. Since then I have done some questioning of physicians and trainers interested and experienced in this field. Discussions, together with reading the available literature, have brought out one fact and that is that little is actually known. As stated by Clayton Thomas last year, in a paper on the effects of vigorous athletic activity on women, "if one interprets 'known' to mean that which has been established by studies, employing the scientific method, then it must be admitted that until recently there has been little to discuss. The most striking thing about research on women athletes is the lack of it in the United States."

The American Medical Association's Committee on the Medical Aspect of Sports had this to say regarding athletics for girls: "The health benefits of wholesome exercise are now well substantiated and are just as pertinent to the female as to the male. The woman who maintains a high level of health and fitness can meet family or career responsibilities more effectively and can pursue a vocational interest more enjoyably. Participation in healthful physical recreation is now accepted rightfully as *contributing* to the female image instead of detracting from it."

There is still a belief by many that some competitive sports are too strenuous for even healthy women. There are no data to support this belief. Consider the Boston Marathon of '67 when two women (Burgay and Switzer) entered the race and not only finished, but finished ahead of many of the men. Certainly there are few, if any, athletic events that are more strenuous and stressful than the marathon. We hear the objection there is danger of damage to the reproductive organs. There is hardly any competitive sport in which any organ may be injured. Take the uterus, for example: Is it not protected in the same way as the other organs of the body? All of our abdominal organs, male and female, and even the brain with its solid container, the skull, have their built-in suspension and cushion. Why should one be injured more easily than the other? As far as the menstrual cycle is concerned, world records have been set during every phase of the menstrual cycle. As for pregnancy in the first few months, in the 1956 Olympics 10 of the 26 women medal winners were pregnant.

Since this Institute primarily concerns basketball, the most frequent injuries in this sport will be discussed. Before we get into

the specific injuries, we will mention quickly what actually happens to the tissue when injured, what we can do to prevent it, and what we can do to hasten recovery after it has been injured.

Once an injury is sustained, it is of utmost importance to the doctor or trainer to know how it happened. What were the mechanics of the injury? Was it a direct blow? Was it a twist? Was there contact with another player? Did it happen when the player was coming down after a rebound? Frequently, if the players are made to realize that it is to their interest for the "how" of the injury to be known, they will have the correct answer. Remember that the earlier the injured part is seen and examined by the coach, doctor, or trainer, and the sooner appropriate diagnosis and treatment are initiated, the better the prognosis for a complete recovery, whether it be contusion, strain or tear of a muscle, sprain of a joint, or fracture of a bone. Uncontrolled hemorrhage and effusions into the injured area result in swelling and impede the healing process. This may cause formation of scar tissue and even calcification in the soft tissues. Proper, immediate first aid is a must.

Swelling, hemorrhage, or effusion can be reduced to some extent by *elevation, pressure,* and *ice* or *cold packs.* The *elevation* of the part increases the venous and decreases the arterial circulation. The *pressure* decreases both venous and arterial flow. The *ice* or *cold pack,* which is now routine throughout the athletic world, has three definite advantages: 1) It is easily available and easily transported. 2) It causes a numbing of the area. (Not infrequently the injured person wants this pack discontinued because of pain, but it is not the cold that is causing the pain.) 3) It causes a vasoconstriction, thus inhibiting swelling.

Another help to lessen the swelling is the use of enzymes. Although there are some who do not agree, many others have found them useful. In order to be effective, however, they must be started very early after the injury or they are of little use. This process should in most cases be carried on for 36 to 72 hours. After 48 to 72 hours, circulation should be encouraged by heat, whether moist or dry; electrical stimulation of muscles; ultrasonic therapy; massage; and any method that will help rid the soft tissues of the residues of the injury.

Exercise of the injured area should start when pain and swelling will permit. This depends on the severity and location of the part injured. As a rule, injuries to the joints, especially to the knee where hemorrhage has taken place *in* the capsule, require the *delay* of the application of heat. So often the coach starts hot packs or the whirlpools to a knee that is progressing satisfactorily only to find that it has begun to swell again.

Various methods, all with their advocates, are used in muscle strengthening. Active and passive motion (depending on the joint or muscle involved), isometric and/or isodonic exercises each has its advocates. Probably the middle of the road with some of each is the best. As we speak now about some specific injuries, keep in mind what has been said in general about the mechanism of the injury, first aid, and rehabilitation.

Contusions or bruises are best treated as mentioned, by ice packs and moderate pressure, and if on an extremity, by elevation of the part. Heavy plastic bags, about 12 X 24 inches, are convenient containers for ice. These can be applied directly to the skin for short periods at the courtside. After the game, if the packs are to be continued, a thin towel or elastic bandage can be applied and the ice packs placed over this. All of you, I am sure, have seen a blow to the forehead, cheek, eye, or ankle that swells immediately, making the commonly termed "goose egg." This is caused by the rupture of a vein (very rarely an artery, at least of any size.) This deformity disappears in a short time, the blood being partly carried away and partly diffused into the surrounding area. The treatment is the same, ice and pressure, and if on an extremity, elevation.

When the ankle is injured (if it is not a contusion or, in track, a laceration or spike wound) it is an injury of overextension, flexion, inversion, eversion, or a combination of two of these movements. There can be an avulsion or tear or strain of the Achilles tendon due to acute dorsiflexion. There may be stretching, tearing, or complete rupture of the many ligaments surrounding the ankle that give it stability. Here is where early examination and mechanism of injury is so important. The ankle injury seen early, within an hour, is not too hard to diagnose, chiefly because the medial and lateral malleoli are subcutaneous and palpable as is also the adjacent dorsum of the foot. Only the posterior portion cannot be palpated. The most frequent injury to the ankle is the stretch or tear of a ligament caused by eversion of the foot. This happens when a player comes down after a rebound, steps on an uneven surface (as on an opponent's foot) and turns the ankle, the bottom of the foot being turned in and the ankle out. This also is the least painful and least disabling injury. The most severe sprain of the ankle is the hyperextension sprain. Here tenderness is anterior at the junction of the leg and foot as well as on both sides of the ankle. In a painful ankle injury, the competitor should not be allowed to walk from the floor; she should be carried or hop. Elastic wrap, elevation, and ice packs should be used immediately. Two or three days after minor sprains and four to seven days after more severe sprains, a controlled program of exercises should be started. This should be done with supportive taping. Walking and jogging can be started and increased

gradually until short sprints, interrupted by walking, can be undertaken. Last to be undertaken should be running, in circles or figure eights. Only when the athlete can go through all of these procedures without signs of a limp should she be allowed to return to competition.

Injuries to the hand and fingers should, like all others, be X-rayed. Again, if possible, find out what the mechanism of injury was. Jammed fingers must be examined carefully and early to see if there is any ligamentous injury. Each joint of the finger is enclosed with a capsule. It has medial and lateral collateral ligaments the same as the well known ones of the knee.

An attempt should be made very early to evaluate the injury to a joint. One frequent injury to the fingers is the one most frequently seen in baseball and softball players where the distal phalanx cannot be voluntarily extended; this is an avulsion of the extensor tendon and must have early treatment or it will be a permanent deformity and disability. This is not too serious for the male but rather unbecoming to the female.

The knee injury in basketball is most usually a simple contusion to the patella, or knee cap (such as when the contestant falls to her knees), and should be treated as such. The diagnosis of subcutaneous swelling or intracapsular swelling should not be difficult. Swelling *in the capsule* is due to trauma to the lining of the knee joint and subsequent increase in fluid, most usually blood. The swelling will be above and on each side of the patella; in fact, the patella when palpated will seem to float on the encapsulated fluid. When the swelling is excessive the athlete should see the physician as this may lead to serious complications. Any *giving way*, *catching*, or *locking* of the knee joint should be evaluated by the physician. Here again the treatment is elevation, pressure, and ice. If the injury is to the subcutaneous structures over the knee cap, it may be painful, but little harm is likely to come from continued use.

The "charley horse" and pulled muscle can be classified together. The mechanism of injury is different but the condition caused is generally much the same. There is bleeding in the body of the muscle and, of course, the first aid is pressure, elevation, and application of cold. This injury produces scarring in the muscle, and our goal in rehabilitation is exercise as early as possible to break down the adhesions formed in the process of repair. This is a serious injury and the athlete should never be returned to competition too early. A bruise on a bruise may lead to a condition known as myositis ossificans (calcium laid down in the body of a muscle.)

The muscles of the shoulder form a complex encirclement of the shoulder joint. Injuries in this area, if they are more serious than contusions, should be seen by the trainer or physician. Any pain or

weakness on abduction, adduction, or internal or external rotation are of a serious nature and should be carefully evaluated. Initial treatment here is as described before, rest and ice packs.

A shin splint is an inflammation of the muscles from the shin to the foot and probably results from unaccustomed activity on a hard surface. This can be a very disabling condition if allowed to continue untreated. This must not be confused with circulatory disturbances or fatigue fractures. When there is a question of diagnosis, see the trainer or physician and have X-rays. This condition is far easier to prevent than to treat. Means of prevention include preseason jogging with gradually increased activity. A helpful exercise is to stand with the forefoot on a stair and gradually raise and lower the body on one and both feet. Stretch the calf muscles by standing with heels flat on the floor and lean into the wall, keeping the heels on the floor. Equip your athletes with well fitted shoes. A rubber heel lift often is a help. Warming down after a workout is important. Sudden cessation of activity can cause irritation of the leg muscles and a pooling of the blood and waste products in the lower leg.

Contact lenses are of two types—the corneal, which covers only the colored portion of the eye (maybe even not all of that), and the scleral, which covers the colored portion of the eye and sclera, or white portion of the eye. For contact sports, such as basketball, the scleral lens is preferable as it is not so easy to dislodge.

Coaches and athletes will try almost anything to improve their performance. Almost without exception these "gimmicks" are useless, and some are even harmful. Trainers, coaches, and athletes alike must be aware of the pitfalls in the use of these "gimmicks" to improve performance, whether it be by lessening fatigue, giving more strength, or increasing the reflexes. Generally speaking, Dr. Cooper, one of the Olympic team physicians, recently said, "We humans are notoriously on the prowl for a quick or easy way or that special something extra. There are no short cuts to an excellent performance, but I guess it is the nature of the beast to keep striving to find some help!!"

A special committee of the American Medical Association, together with the National Federation and other athletic groups, has checked into the use of amphetamines in sports and their effects on athletic performance. Exhaustive trials showed that, under test conditions, performances are generally better when the drugs were taken; thus it was clear that an unfair advantage could accrue to an athlete who would use them. The *general* conclusion was that the use of amphetamines to improve athletic performance is inconsistent with the practice and ideals of sportsmanship and, since a repeated use may be associated with harmful effects, the committee strongly condemns the prescription of these drugs for this purpose by

physicians or their administration or use in athletics by coaches, trainers, or participants.

This increased performance is apparently more helpful in the solo-type activity. Many studies have shown that in team-type activity, where there are problem-solving conditions, there *is impairment* of the ability to solve the problem. Subjectively they think they are doing well but objectively they do not do as well.

Vitamins are much overrated. The healthy athlete on a well rounded, sensible diet does not need vitamin supplements. The cell cannot be supercharged with vitamins; it will retain only so much. Frequently advertised liquid formulas have little, if anything, to add to muscular performance. Added oxygen before a race has never been shown to affect a performance. Oxygen cannot be stored and increased oxygen tension cannot last longer than two or three minutes. Little was proven in the Mexico Olympics as to whether oxygen improved performance. There are some coaches who insist on oxygen's being on the side lines, especially at high altitude, but at best it probably is only a psychological help.

In closing I would like to say that it has been my pleasure to talk to you. You are working with one of the most important aspects of our lives, whether we be old or young.

Teaching and Coaching Track Events

Techniques of Sprinting

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Sprinting for women includes all flat races up to and including the 440-yard dash. It is often defined as running close to maximum effort over a relatively short distance.

It is difficult to classify the ideal sprinting type. Among the common characteristics of sprinters are a combination of 1) strong, well-developed muscles; 2) quick reaction time; 3) quick reflex time; 4) motor-mindedness; and 5) a strong power of inhibition.[1]

A sprinter's speed depends upon the length of her stride and the rate of the stride. The length of the stride will vary among sprinters, depending upon their height and length of legs. Optimum stride length may be approximated by multiplying the runner's height by 1.17, then adding or subtracting four inches.

The cadence, or rate, of striding in good sprinting is 3½ to 4½ strides per second. By improving either the stride length or rate (cadence), the sprinter will increase her speed. It is useless, however, to improve one at the expense of the other. The rate of striding is governed by individual differences, and for any one individual sprinter there is very little room for improvement in the cadence. Therefore, improving the length of the stride offers the best opportunity for improving a sprinter's speed.

The efficiency of the length of one's stride is affected by individual differences in body structure. By developing muscular strength, elasticity, and joint mobility, the stride length may be increased.

Leg Action

The body is propelled forward by the extension of the leg (ankle, knee, and hip) applied by the foot as it pushes against the ground.

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[1] G.T. Breshnahan, W. W. Tuttle, and F. X. Cretzmeyer, *Track and Field Athletics* (St. Louis: C. F. Mosby Co., 1964), p. 56.

The extent of this drive is influenced by the action of the opposite leg. The stronger the drive, the higher the knee lift of the opposite leg. After the drive, the leg begins to flex into its recovery position, causing the foot to rise close to the buttock. This movement permits the leg to be brought through the recovery phase in a high compact, short lever, thus increasing the speed of it. As the foot of the recovery leg moves down toward the track, in front of the body, it again makes contact with the ground under the body's projected center of gravity.

Foot Action

The feet should be used in a relatively straight line. The ball of the foot makes contact with the ground first. As the body begins to rotate over the foot, the heel is lowered momentarily to the ground. As the foot touches the ground, the knee is bent. As the body continues to rotate over the foot, the heel is lifted and the leg is extended at the ankle, knee, and hip joints to propel the body forward.

Arm Action

The arm movement is forward and backward; however, some individuals will have a slight movement toward the midline of the body. The legs set the pace for the arms in sprinting; however, arm speed will affect leg spread. At the onset of fatigue, vigorous action of the arms will lead the leg action. The shoulders should remain square to the direction of the run while the hands move forward toward a line even with the shoulders and back close to a line with the hips. The range of arm action is approximately the same in front as behind the shoulder.

Position of the Trunk

The amount of forward lean depends upon the wind resistance as well as the rate of acceleration. The main idea is to keep the center of gravity just ahead of the driving foot.

A sprinter will have a greater forward lean at the start of her race; however, as she accelerates, the lean gradually diminishes as top speed is reached. Body lean is believed to be a function of acceleration. In other words, even though the back position is relatively erect, the sprinter should not permit herself to straighten up completely in an effort to run faster.

Relaxation

Relaxation is achieved by practice. Tense only those muscles which are of immediate concern with the action. Unnecessary tense movements are wasted efforts. The movements lose their smoothness!

Errors in Sprinting	*Correction*
1. Too short a stride length	Increase stride by increasing flexibility of hip and hamstring muscles. Strengthen the quadriceps and hip flexors. Overemphasize the drive and high recovery knee lift.
2. Tenseness in hands and arms (e.g., clinched fist)	Consciously relax hands and arms. Practice accelerated relaxed runs.
3. Straightening up too fast (causes trunk to lean backward too much)	Strengthen back and abdominal muscles and stretch hamstring muscles. Practice running up an incline or steps (two at a time).
4. Arms cross chest as they move forward; a slight rotation of trunk may be observed	Stretch anterior chest muscles to ensure adequate flexibility in this area. Keep elbows tucked closer to the body and emphasize the forward and backward movement of the arms.
5. Running slightly to the left or right	Run in a straight line. Focus on an object that is eye level between 50 and 100 yards in front of you, then run toward the object.
6. Extra low knee lift (usually combined with short stride length caused by a lack of extension of the driving leg and low knee lift of the recovery leg)	Overemphasize the drive and high recovery knee lift over short distances. Run up an incline or steps.
7. Extreme toeing out when running; tight lateral muscles of the foot	Emphasis. The toes should point along the line of the run. Place feet in forward position when running or jogging.
8. Bobbing head or focusing toward the ground instead of forward at eye level	When running, pick up different objects to focus upon that are about eye level. Relax neck and jaw muscles.

Errors in Sprinting	*Correction*
9. Extra high carriage of the head (hyperextension of the neck)	Same as above.
10. Breathing with mouth closed	Let breaths come naturally in and out of nose and mouth.
11. Pounding into the ground with the feet	Run lightly, making as little sound as possible.

Considerations in Starting and Sprinting

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So much has been written about the teaching and practice of these two aspects of a race that it is not the intention to write more about them. What must be understood are the principles applied to starting and to running fast. So often one hears "You can't make a sprinter," or "Sprinters are born, not made," but little is uttered about not getting the best out of a sprinter or the work and observation necessary to have someone run faster.

Any well written book about track and field athletics has a chapter on starting and sprinting, so read many texts; but it is equally important to attempt to find out the ways of starting and to feel what it is like to run as fast as possible, so practice yourself.

Starting

There is no fixed way to start a dash, but it has been found that the crouch position is most advantageous because:

1. It allows the powerful muscles below the waist to work as expediently as possible to *pull* the body on its way by the best use of leverage of tendon on bone.
2. In the "set" position, the body is allowed to displace its center of gravity as far forward as is controllable, thus taking weight from the lower limbs, allowing them to work more freely, through a full range and with maximum contraction against a resisting surface—the blocks.
3. Individual adjustment of the angle at each knee and at the hips is encouraged, depending upon the sprinter's height, strength, mobility, and muscular contractile power.
4. The position of the fingers and thumb behind the starting line is important as, suitably spread to allow for individual differences, the greatest height from fingers to chest is made possible so that the body's surge *forward-upward* will not result in falling forward with a consequent lost of thrust.
5. The hips, always being higher than the shoulders, also are enabled to work maximally in extension of the lower and upper body.

The crouch start, then, has more advantages than disadvantages.

One fault which many coaches are apt to encourage is to devote the greater proportion of time in training to starting, when running fast is of prime importance. Furthermore, coaches are sometimes guilty of trying to fit an athlete into a given way of starting by establishing fixed distances between line and first-foot and between feet. This should never be done. Each athlete must be treated individually and the most efficient method should be created for the athlete concerned.

Coaches should realize that there is a perfect correlation between reaction time from the blocks and the time for a 100-yard dash in an excellent performer, but that sprinters differ more markedly in reaction time than their actual velocity to cover the given distance, after contact has been broken with the blocks.

The angle at which the body is driven from the blocks is important. Even though the lower limbs extend and move with great speed, there will be dissipation of energy if the force generated is not applied through the body's center of gravity.

Again, coaches should note that lifting the body too soon after leaving the blocks causes loss of force application; yet, at the same time, no athlete should be led to believe that a forward body lean is necessarily to be preserved throughout a sprint because it is a sprint. The lean will disappear as the athlete accelerates and begins to drive the ground *down and back*, allowing the lower limbs to move through a great range.

There is no such thing as an easy part of a dash; there are no tactics in a 100-yard sprint. Drive down and work on every step are the kinds of encouragement a coach needs to give.

Sprinting

The longest stride of anyone in any race is in a sprinter at speed. It is not that the sprinter attempts to increase stride length *consistently* throughout a dash; it is that the stride length is automatically increased because of power application and the resultant velocity increase.

The very best sprinters are those who hold maximum speed longest. Endurance, then, is important in sprinting and in sprint training. A sprinter sometimes appears to "come through" in the last quarter of a dash. This is not so; it is that the other athletes are losing their speed earlier and the winner usually is the one who sustains speed longer.

The speed of the arms determines the speed of the legs. A long arm action causes a slow long stride; a very bent short action will "cut" the time the legs have for power application. A considerate

coach will always look to the strength of an athlete's arms and shoulders and to adjustments necessary in a sprinter's arm action for most effective propulsion.

More study must be given to arm action in sprinting. Arm action determines leg action. It has long been advocated that the arms bent at right angles should be pivoted from the shoulder and the curled fingers should pass, in a straight forward-backward pattern, between hip and shoulders.

Look at the sprinter's leg action: The drive is down and back, then the heel rises almost to buttock height; the lever is shortened as the compact thigh/leg pass through with the knee raised high; then the leg is dropped to the ground and the lever is lengthened. Thus the leg cycle is long, short, then long again.

As the speed of the arms coordinates the legs' action, should there not be a corresponding lengthening and shortening of levers in arm action, too? Obviously, this must be taken into consideration in coaching, but generally this aspect has been ignored for too many years.

Not every indoor sprinter will be an excellent sprinter outdoors. A small athlete may achieve maximum acceleration at, say, 45 yards in a 100-yard dash, whereas a tall, more powerful athlete will achieve greatest speed at 60 yards, which leaves a shorter distance for sustaining speed. Coaches must note this particularly when choosing a sprint-relay team, and organizers should also realize that, relatively, there should be *more* space given athletes at the end of a dash indoors than outdoors. Naturally, this is not possible (otherwise the dash indoors would be made longer); however, real concern should be given to safety measures and to use of shock-absorbent materials into which hurdlers and sprinters may reduce their generated power at a race's end.

Improving Relay Times

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A coach who has the material for a good relay team, whether it be for sprinters or a good medley combination, does not necessarily have a good relay team! A relay is much more than just the sum of its parts. Many valuable yards can be gained in relay racing through smooth, efficient baton exchanges and by placing the relay members in the order that will contribute most to the total effort.

Sprint Relay Baton Exchanges

The fastest and most efficient sprint relay baton exchange is the downward pass, first conceived by Geoffrey Dyson, the former national coach of Great Britain. The great advantage in using the downward pass is that there is always plenty of baton to grasp during each exchange, even though the baton is never shifted from the athlete's receiving hand to his opposite hand after an exchange has been made. This is not the case, however, when the upward pass is used.

The receiver stands just inside the restraining line (11 yards in front of the actual exchange zone), poised to start fast as soon as the incoming runner passes a predetermined "go" mark. The "go" mark may be any distance up to 75 feet in front of the restraining line, depending upon the incoming runner's speed and the acceleration ability of the outgoing runner. This distance may be determined by using the chart in Figure 1.

When the incoming runner passes the "go" mark, the receiver drives out without looking back. As soon as she nears the end of the 22-yard exchange zone, she puts her receiving arm back, with elbow straight and wrist bent upward, forming a V with her thumb and fingers. By this time, the incoming runner should be within two arm's lengths of the receiver so that she can bring the baton into the outgoing runner's receiving hand.

The distance between the runners when the exchange is made is called "free distance." If the baton pass is made at a time when both runners are running at approximately (near) top speed and the outgoing runner is two arm's lengths ahead of the incoming runner, as much as two yards of "free distance" may be gained on the exchange.

Incoming runner's time for the final 27 yards of her run

Outgoing runner's time for the first 28 yards of her run	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3
3.1	33	29	24	19	16	12	9	6	3	*	*	*
3.2	37	32	27	23	19	15	12	8	5	3	*	*
3.3	41	35	30	26	22	18	14	11	8	5	3	*
3.4	44	39	34	29	25	21	17	14	11	8	5	2
3.5	48	42	37	32	28	24	20	17	14	10	8	5
3.6	52	46	41	36	31	27	23	20	16	13	10	7
3.7	55	49	44	39	34	30	26	22	19	16	13	10
3.8	59	53	47	42	37	33	29	25	22	18	15	12
3.9	63	56	51	45	41	36	32	28	24	21	17	15
4.0	66	60	54	49	44	39	35	31	27	24	20	17
4.1	70	63	57	52	47	42	38	34	30	26	23	20
4.2	74	67	61	55	50	45	40	36	32	29	25	22

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Figure 1. Sprint relay "go" mark chart.

Ascertain the outgoing relay runner's time for the first 28 yards of her run, and the incoming runner's time for the final 27 yards of her run. Based upon these times, the exact "go" mark distance in feet can be determined when the sprint relay exchange is to be made five yards from the end of the zone.

The baton must be passed either from the left hand of the incoming runner to the receiver's right or from the right hand of the incoming runner to the receiver's left. In the sprint relay's curve exchanges there is a decided advantage in passing from right to left (the inside pass), since this permits the receiver to lean in as she runs the curve.

Therefore, sprint relay teams should always use both exchange techniques—passing from right to left at the first exchange, from left to right at the second, and from right to left at the third. In this way, the inside pass can always be utilized in the curve exchanges, and the runners need never be bothered with changing the baton from one hand to the other during the race.

Sprint Relay Runner Placement

When deciding the order in which the sprint relay team members should run, it must be remembered that the most important consideration is the speed of the baton over the racing distance. The baton must be kept at near top speed and must be allowed to slow down as little as possible throughout the race.

Figure 2 shows that when sprint baton passes are made properly (near the end of the zone so that both runners are traveling at near top speed and, consequently, the baton speed is slowed as little as possible), the relay runners do not all cover the same distance with the baton. The lead-off runner actually runs 12 yards farther with the baton than the anchor runner does.

Runner	*Accelerating without baton*	*Running with baton*
Lead-off runner	0 yards	115 yards (2 yards, free distance)
Number 2 runner	28 yards	108 yards (2 yards, free distance)
Number 3 runner	28 yards	108 yards (2 yards, free distance)
Anchor runner	28 yards	103 yards

Figure 2. True sprint relay distances.

(Ideally, the exchange should be made five yards from the end of the exchange zone with two yards of "free distance.")

Therefore, it is plausible, since sprinters can only accelerate to top speed and competitive spirit cannot possibly be a factor beyond that point, that the team's top sprinter should lead-off the relay rather than anchor it. This would ensure that the baton would be moving 12 yards farther at the best sprinter's speed and 12 yards less at the slower sprinter's speed.

Medley Relay Exchanges

In the women's medley relay (220-110-110-440), each of the three baton exchanges falls into one of the three general medley relay classifications—the step-up exchange, the regular exchange, and the step-down exchange.

In the step-up exchange, the baton is passed from the incoming runner to a runner who will be maintaining a faster pace (220 to 110). In the regular exchange, the baton is passed from the incoming runner to a runner who will be maintaining the same pace (110 to 110). In the step-down exchange, the baton is passed from the incoming runner to a runner who will be maintaining a slower pace (110 to 440).

To gain valuable yards in the medley relay, the step-up exchange should be made in the first half of the exchange zone and the step-down exchange should be made in the last half of the zone. In this way, precious yardage can be gained, since more of the race can be run at a faster pace than if the exchanges were made in the center of the zones. The actual distances run will be approximately (215-115-115-435), allowing the 110-yard runners to cover at least 10 yards of the race that would have been run by the slower 220 and 440 runners.

Training for the Relay Events

To develop baton exchange timing, the relay team members must practice baton passing regularly. The baton passing practice can either be added at the end of the regular practice sessions or be included in the sessions as a part of a short-interval training program.

Besides working on baton exchanges, the team members should occasionally practice carrying a baton as they run through their workout schedules. The lead-off runners should spend some additional time driving out of the blocks with the baton in their hands so that this will not be an unfamiliar experience for them.

The relay events should be more than just an afterthought. By using a little *fore*thought, the coach can be confident that her well-prepared relay teams will be better able to turn in winning performances.

Hurdling for Girls and Women*

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Someone has stated that hurdling demands the speed of the leopard, the spring of the deer, and the heart of the lion. Surely all who have participated in this event, or who have observed the grace and symmetry of the skillful performer, recognize the truth of this analogy. There is no other activity in track and field which demands such reckless abandon as hurdling.

Hurdle races for girls and women range in distance from 50 yards to 200 meters. Statistics concerned with placement of the hurdles and their height for each race are found below:

Spacing of Hurdles

Length of Race	Number of Hurdles	Start to First Hurdle	Distance Between	Hurdle Height	Distance from Last Hurdle
50 yards	4	39' 4½"	26' 3"	2' 9"	31' 10½"
70 yards	6	29' 4½"	26' 3"	2' 9"	45' 9"
80 meters	8	29' 4½"	26' 3"	2' 9"	39' 4½"
100 meters	10	42' 7½"	27' 10¾"	2' 9"	34' 5⅜"
200 meters	10	52' 5¾"	62' 3"	2' 9"	42' 7½"

Characteristics of the Successful Hurdler

Speed is the primary prerequisite for success in the hurdle event. For this reason tall (5'7" or more), fast girls have a marked advantage over their slower adversaries. The tall girl is able to negotiate the hurdle with a minimum of stride modification. Her height advantage, coupled with natural speed, makes her virtually unbeatable.

Flexibility is another important asset for the hurdler. Loose hips permit a sprint between barriers, with a point of take-off sufficiently

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far from each to avoid "jumping" (as is typical of the inflexible performer). There also is continuity or rhythm throughout the entire race when the flexible hurdler performs. Inflexible hurdlers, on the other hand, tend to "syncopate" every fourth step, thereby contributing to an inefficient technique.

Quick reflexes are also essential to success in this event. Not only do quick reflexes contribute to an explosive start, but facilitate trail-leg recovery as well. Indeed, one of the most noticeable characteristics of the successful hurdler is her ability to delay trail-leg action during hurdle clearance and then "punch" her leg ballistically forward for the following stride.

In addition to these physical characteristics, successful hurdlers tend to manifest a high tolerance for pain. Individuals participating in this event frequently strike the barrier during practice. Falls are also common, even for the highly skilled person. Thus one must learn to ignore bruised feet and legs training over hurdle, after hurdle, after hurdle, to develop the speed and poise so essential to peak performance.

Mechanics of Hurdling

It was stated earlier that hurdling is primarily sprinting, yet one must realize that better performers combine their natural speed with an efficient hurdle-clearance technique. Though techniques vary with individuals—and this is appropriate—certain basic principles are reflected in the style of all good hurdlers.

The start. All hurdlers utilize some variation of the sprint start. Individuals differ, however, in their approach to the first barrier. Tall hurdlers usually cover this distance in seven half-strides, while the shorter performer usually takes eight. When seven strides are taken, the front foot in the starting block is the lead foot over the hurdle; when eight strides are taken, the rear foot in the starting block becomes the lead foot over the hurdle. When working with beginners, it frequently becomes necessary to shorten the distance to the first hurdle. This procedure permits the performer to develop confidence. She learns to drive out of the blocks like a sprinter, ignoring the barrier before her. Later the hurdle can be moved to its proper distance from the starting line. With continued improvement it may even become necessary to change the approach pattern from eight to seven strides. This can be done by merely reversing the feet in the starting blocks.

Hurdle clearance. The take-off point for the hurdle should be from five to six feet from the barrier. If the take-off point is too close, the hurdler tends to swing the lead leg sideward and upward

rather than straight forward and upward. If the take-off point is too far from the barrier, the performer tends to "sail" rather than step over the top rail.

Generally speaking, all hurdlers buck or pike at the instant of take-off. Some performers refer to this as "diving" at the hurdle. This action facilitates lead-leg lift and helps the performer maintain her forward lean, as well as her center of gravity, at a constant height throughout the race. Actually, lead-leg action differs little from the sprint stride. Only the knee and thigh are elevated as is necessary to ensure hurdle clearance.

In every sense, the "split" over the hurdle is a normal, bilateral, action sequence. As in walking or running, the arms and legs work in counter-opposition to each other, with an exaggerated extension of the arm opposite the lead leg. (Some fine hurdlers extend both arms during hurdle clearance.) The stride off the hurdle is quick, though not a pronounced stamp as some would indicate by use of the term "snap down." Trail-leg action is delayed until the lead foot has cut below the hurdle rail. Better hurdlers then "punch" the trailing knee forward and upward to permit a natural following stride.

Action of the trail leg, described by the word "punch," is a reflection of current thinking regarding this event. This is unlike the "flattened split" required of the male high hurdler (or the short-legged female). Rather, the performer assumes a more upright position during hurdle clearance, with the thigh and knee extended slightly downward from the horizontal. The knee punches upward, across the hurdle toward the chest as the performer drives on to the next barrier.

It is essential that the hurdler come off the hurdle in balance. To ensure this, the shoulders are squared forward at all times with the arms carried away from the sides for stability. The legs and feet, on the other hand, remain in alignment throughout the race. If rotary motion occurs during the trail-leg punch, the corresponding arm is extended toward the leading foot.

The strides between hurdles. When analyzed independently of the hurdles, the strides between hurdles are those of a sprinter in every respect. The performer's body is inclined slightly forward. The arms are fixed at 45 degrees with the hands swinging from the hip rearward to the chin forward. The long sprinter's stride is made possible by a powerful push-off from the track, high knee action, and a shortened leg lever during recovery.

Teaching Girls To Hurdle

Candidates for the hurdle event should be selected from girls with good speed. This would include those who can run 100 yards in 11.5

seconds or better. Regardless of how well a performer learns to hurdle, without basic speed she has little chance for real success.

Perhaps the first step in the teaching process (following explanation and demonstration) is determining the candidate's lead and trail leg. If there is no marked preference, it is strongly recommended that the left leg be designated as the lead leg and the right leg the trail leg. This is particularly important if the hurdler participates in the 200m race, where a right lead leg tends to drive the performer off at a tangent to the turn. Having determined whether she will be a right- or a left-leg hurdler, the learner turns her attention to the development of hurdling skills.

Trail-leg action is first explored by running alongside several hurdles whose outer edges are parallel to a hypothetical vertical line bisecting the performer into two halves. This activity forces the runner to swing the inside (trail) leg over the hurdle or else deviate from her course. At first, she likely will hop past the hurdle, but with practice she will learn to step beyond the hurdle with the lead foot and "punch" the trail knee through to recovery. This is an effective drill for teaching and quickening trail-leg action and should be practiced daily by all serious hurdlers.

Lead-leg action should be explored next. Since this involves a flight over some object, it is wise to begin at a height which is acceptable to the learner (12 to 18 inches). Once she has developed sufficient courage to concentrate on the skill of hurdling, the performer should give initial attention to a forceful takeoff. She should exaggerage the buck action, lifting the thigh of the lead leg sufficiently high (above the horizontal) to permit hurdle clearance with a slight bend in the knee. A relaxed lead leg is essential to a naturally quick step-down beyond the hurdle. (Most hurdlers take off from 5 to 6 feet from the hurdle and step down between 2½ feet and 3 feet beyond the hurdle.)

Since beginners tend to crowd the hurdle at takeoff, forcing them to jump and sail well beyond a reasonable step-down point, considerable time must be given to the perfection of the hurdle clearance skill. This can best be done by working over two or three hurdles at a time. When necessary, marks can be placed on the track as points of reference, with the learner striking these again and again until her stride pattern is acceptable.

Early in the learning process the candidate for this event must learn to come out of the blocks and over a single hurdle. Initially there is little concern for proper distances. The first hurdle is placed at a point where it can be easily negotiated. The important thing is to get the performer to start explosively, taking the first and each successive hurdle without conscious attention. When she can reach the first hurdle in either seven or eight strides, covering the distance

between the next five or six hurdles in three strides, she is ready for serious training.

Training Program for Hurdlers

The training of hurdlers should include activities which are aimed at the development of flexibility and strength, as well as the specific factors of speed, endurance, and hurdling skill. Because hurdling tends to become boring and, if persisted at too long, can be physically harmful to the performer, the training schedules which follow contain a variety of different activities.

A TYPICAL TRAINING SCHEDULE FOR THE BEGINNER—EARLY SEASON

DATE	WARM-UP	STRIDING	STARTS	IN AND OUT HURDLES
M	30 min. jog, stretch, and trail-leg drill	5 x 75 fast—walk back		10 x 4 for form Finish with 2 laps of in and out striding
T	"	3 x 110 fast	10 over 3 hurdles	Finish with 4 laps of in and out striding
W	"	5 x 75 fast out of turn		5 x 5 hurdle shuttle Finish with 10 pop-up jumps at long-jump pit
Th		2 x 150 for form		5 x 8 for form and strength 5 without hurdles
F	"	2 x 4 x 75 fast striding . . . walk back rest . . . jog 440 between sets of 4 Set high jump bar 4" below best jump and work 20 minutes for fun and form Finish with fast stride of 220 yards		
S	"	½ hour of fartlek on grass		
Su	"	Complete rest		

This schedule would be used following four or five weeks of preconditioning. As the season moved along, one would likely impose greater demands in the number of shuttle hurdles run, more extended fast striding, and surely would add work with a relay team (e.g., baton exchanges and the like). If the takeoff foot for the two jumping events is similar to the takeoff foot for the hurdle event, practice on these activities contributes significantly to explosive power.

A TYPICAL TRAINING SCHEDULE FOR THE MATURE HURDLER–EARLY SEASON

DATE	WARM-UP	STRIDING	STARTS	IN AND OUT HURDLES
M	4 laps jog, 15 min stretching	5 x 220–32		Walk back rest 5 x 5 shuttle for form 20-30 min. work with relay team
T	"	3 x 75 fast		5 x 5 shuttle with five steps between, quickening drill. Finish with 4 laps of in and out striding
			10 over 2	
W	"	2 x 5 x 75 sprint buildups; walk back, rest		5 x 8 hurdles at full speed. 2 laps walk between each set.
		Finish with 10 min. easy striding on grass		
Th	"	1 x 330 for form		
			5 gun starts without hurdles 10 over 2 hurdles	
				20-30 minutes work with relay team
F	"	2 x 220–28, with one lap jog rest Take 10 pop-up jumps at long-jump pit Finish with 15 min. easy striding on grass		

A TYPICAL TRAINING SCHEDULE FOR THE MATURE HURDLER–EARLY SEASON (continued)

DATE	WARM-UP	STRIDING	STARTS	IN AND OUT HURDLES
S	4 laps jog, 15 min stretching	3 x 150 fast		Work over 7 hurdles set at 200m distance; 5 "trips," striding through full distance each trip
Su		Complete rest		

As the season moved along one likely would hurdle only on odd days. Additional emphasis would be given to speed work, perhaps in the form of relay sprinting. Entering the 100- and/or 220-yard races would also be beneficial. Too, added time would be given to quickening drills for both the trail leg and the lead leg. These do not necessitate going over hurdles and thus minimize the constant "pounding" of feet and legs.

Perhaps it should be emphasized that hurdlers are sprinters who merely have modified their running styles to accommodate a series of purposefully imposed barriers. To be a really great hurdler, therefore, one must be a nearly great sprinter. On the other hand, girls with good speed, great flexibility, and determination can perform very successfully in the hurdle event. They may even win most of their races–beating the better sprinters–if they are willing to give careful attention and hours of practice to the little details of style.

Distance Running

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Which girls, out of the many hundreds in physical education classes, will make the best distance runners?

They will be the girls who first of all love to run; the girls who love sports mainly for their action and the girls who are willing to work long and hard to achieve their goals (the patient ones).

"Sprinters are born, distance runners are made" is a saying that is largely true. While speed can be improved by improving form, basically a girl has the talent or she doesn't. Endurance and stamina, though they are natural abilities, can be increased. The distance runner is often the small, slender person, sometimes almost fragile in appearance; but there are many body types in this field.

Distance events demand three kinds of training: training for form, speed, and endurance; for pace judgment; and for tactics. In training for form, the coach must try to bring the athlete as close to picture-book perfection as possible, however, she should expect the athlete to cling to her own natural style for awhile, no matter what faults the girl may possess. A compromise must be reached so that, after many months of training, the best possible form becomes automatic. The half mile can be considered as 50 percent speed and 50 percent endurance.

Speed can be improved through much form work. Endurance is gained through a combination of repeated speed work and longer, slower runs. Pace judgment can be learned only through much work with the stopwatch, learning the feel of different speeds at various distances. Tactics involve much mental preparation—setting up a pre-race plan, following the plan but being able to change it during the race. Ability to do this comes only through experience. Spending many classroom sessions in discussing what to do under various circumstances will help prepare the girls to make unexpected decisions sometimes necessary in a race.

Training

The greatest asset a distance runner can have is determination. A minimum of five days per week of training is desirable. Many girls train seven days a week, and often twice a day. The whole body must be considered, not just the legs. To be sure of enough strength in the upper body, many exercises such as push-ups, chinning,

sit-ups, and leg lifts should be used. Exercises for flexibility are necessary, including much twisting and turning in addition to the usual stretching and loosening movements. Training may be done not only on the track but in parks, on football fields, and on golf courses. Any smooth grassy area makes a good training ground, as well as being easy on the legs. Training on cement or other similar surfaces must be avoided.

The most important part of the training is the warm-up. This should involve at least one mile of jogging and easy running, followed by 10 to 15 minutes of complete exercises. Next is the most important part of the warm-up—the key to injury prevention. Called by some, gradual running or "striding," it consists of running a specified distance (usually from 60 to 100 yards), beginning slowly, working up to speed gradually in the middle of the run, and then slowing down at the finish. This is done six to ten times, with the middle of the run becoming increasingly faster towards the end of the series. This gradual running bridges the gap between warm-up speed running and competition speed running and is essential to prevent strained or pulled muscles. After a short rest of walking and jogging (not sitting or lying down), the athlete is ready for the main part of the practice. The warm-up is usually begun about one hour before competition and finished in time to allow 10 to 15 minutes rest and easy jogging before the start. Regular training is begun as soon as the warm-up is finished.

There is a mistaken idea that distance training involves running only many long, slow miles. Much work is done at shorter distances of 100-160-220 yards, and at much faster speeds than racing speed. Endurance comes more quickly through repeated speed than from long slow runs. It is advisable to jog very slowly between fast runs, rather than to walk, except after an all-out effort. During a series of fast runs, if the athlete walks or jogs the same distance as the run, she will be nearly recovered from fatigue and hard breathing before the next run. However, as the athlete's condition improves, the coach will want to cut down the rest interval more and more, thus imitating actual racing conditions when the runner must respond to challenges while feeling fatigue. There is also much work done at the middle distances of 330-440-660 yards, and again, faster than racing speed. These distances may be used alone or in combination with the shorter runs to make a program, for example: three or four 330's or 440's; two or three 660's; or a 440-220-110 yard combination several times, all at speeds indicated by the athlete's condition. Another typical day's work for the girl might be ten 100 yard dashes with a short walk or jog after each. There are endless combinations the coach can use to keep the athlete interested, rather than repeating the same distance over and over.

Overdistance for the half-miler means runs up to five miles once or twice a week. These are more enjoyable when done in a park or on a golf course. Two to three miles is a popular training distance and all of the longer runs can be done either at a steady easy tempo or alternating easy fast runs with jogging. On a track the long run can be done with the straightaways run fast, the turns slow.

Breathing should be natural and in rhythm with the steps. Fatigue in training is *not* dangerous, but normal, and recovery is quick. Hard training makes for easier competition, with less distress.

Form

Form for the distance runner calls for great relaxation, because she is not running at top speed throughout the race. The body lean is not so great as for the sprinter, except at the start and finish when more speed is needed. Relaxation of the shoulders and hips is essential to prevent tenseness when fatigue is felt. A standing start is almost always used, with the foot positions being [illegible] in the crouch start. At the command, "Get set," the runner [illegible] slightly, bending the knees and leaning forward. The distance runner is not up on her toes all the time as is the sprinter; she sets her foot down flatter, with more relaxation.

Pace

The long runs are the most difficult to do correctly, the runner having to learn how to distribute her effort for the best results. Much work must be done with the watch until correct pace can be maintained. A fast start can be taken without fear of draining the energy, for nervous excitement carries the runner during the first yards. A hard, driving start enables her to come down into racing tempo, rather than having to work up into it, which is difficult.

The coach must judge, from the athlete's ability, how much difference in speed there will be in sections of the race. The half mile is usually divided into four 220's and each run is in a specific time. The sprinter type will be faster in the first and last parts of the race, while the endurance type will run a steadier tempo. The third 220 is often the slowest and the runner must guard against too great a drop in tempo.

There is a point in the race sometimes called the fatigue point, when the runner first feels tired and is inclined to slow down. How the girl deals with this part of the race will determine her results. She must make an effort to maintain her speed, and will probably experience a slight recovery once this critical point is passed.

Tactics

In long races, one mistake can cost the race. Unlike the sprints, where an all-out effort is made for the whole race, the distance race must be run at a preplanned tempo. Greater efforts must be made at various points in the race, some of which will be determined ahead of time while others will be decided upon as the situation calls for them. If a big rush for the lead happens at the start, at a pace which the runner feels is far too fast, then she must try to take the best position possible, close to the inside, but not losing contact with the leaders. Many yards can be lost by running on the outside, and this should be done only when necessary.

When and where should a runner pass? If a challenge is made early in the race, the runner may feel that it is not necessary to fight it. But most challenges in the last part of a race should definitely be met, and the would-be victim can do great damage to the confidence of the passer by picking up the tempo, even if just for a few steps. This may discourage the runner trying to move up.

Passing may be done on a curve when necessary to avoid slowing down; if it is done with a rush, use the element of surprise, for in passing on the curve, the passer must run farther. The rush pass, made with a sudden and short burst of speed, is the most effective. When following in a race, it is best to run just off the leader's shoulder rather than directly behind, to avoid being boxed in by a third runner coming up to pass. The runner should learn to run in very close to the side of the leader, both to save distances and to worry the leader a little. The pickup in tempo at the end of a race is usually as long a distance as the runner can maintain her increased speed. This may be as much as 300 yards from the tape, or it may be 100 or 50 yards, depending on the total speed of the race and the ability of the runner. The sprinter may wait until a very short distance from the finish, while the endurance runner will need a longer kick. Tactics for a race can be planned, if the runner knows the opponents and their styles and is aware of her own traits and condition.

Not only the young beginner but even the world's greatest stars suffer agonies of nervousness before competing. This state is best dealt with by acceptance. A feeling of fatigue during the warm-up period is common, especially in distance running, possibly because of the mental strain of the tactics involved and the knowledge that the body will soon be subjected to distress. The runner must realize that this is natural and will not affect her performance. Everyone is experiencing the same thing, and the one who allows herself to be the least bothered by the inevitable butterflies, at least outwardly, will have a strong psychological advantage.

Teaching and Coaching Field Events

Teaching Long Jumping to A Class of 20 Girls

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Equipment Necessary

1. A well-dug pit, as long and wide as possible, with run-ups from opposite directions
2. Spade, stiff broom, and rake

Method

Each lesson should be preceded by a group warm-up. However, if time precludes this, use the leading-up stages of the lesson itself as the warm-up.

1. Spread the class in a wide horseshoe formation and have the participants hop. Have them hop on the other leg, then hop again—a number of times—on the leg of their choice.
2. Space the class and have them run three paces, hop on one foot, and land on two feet. Repeat this a number of times quite freely.
3. Transfer the teaching to the pit.
   a. If there are two run-ups, use both. Halve the class and use the greatest distance of run-up available. Have one group run as fast as possible down the runway and through the pit. Follow this with the other group. Have each line run "in stream" and run back to their places. Repeat the spring, having each runner count the number of paces taken (13-17 recommended). There should be no attempt to "hit the board" or to spring. This practice is solely for the purpose of showing the essential factor of sprinting and to give the teacher the opportunity to insist on *regularity of stride, at speed.*
   b. If there is only one run-up, "stagger" the participants. Have one run down the right side of the run-up followed by one

running down the left side. As they run through the pit, they turn to the side down which they ran and run back to their places.

4. Have the class stand facing the side of the pit, in lines, about 10 yards away.

The Hop

Have each rank run about three paces and hop into the pit, *landing on the takeoff leg*, then run back to their places.

This exercise should be performed "in stream" and twice by each participant. If it is not possible to approach the pit from the side, use both run-ups, having hopping performed alternately from left, then right runways. "Keep the pot boiling" with no pause between efforts. If only one run-up is available, "stagger" the performers as before.

5. Repeat the above exercise; insist upon:
   a. Chest high
   b. Fully extended takeoff leg
   c. Opposite knee drawn up and maintained in line with waist
   d. Vigorous use of arms at takeoff.

The Stride

6. Still from a short approach, have the individuals strive after the takeoff to land with the arms high, head up, back erect, front leg stretched, heel in pit, bent knee of back leg in pit. Insist that the landing be made on the back knee and front heel synchronously. Each performs this twice. Check any tendency to pitch forward.

The Change Step

7. Increase the run-up to about seven paces and *demonstrate* the following: takeoff—bring the opposite knee up and swing the leg forward, *then* pass this leg with the takeoff leg, at the same time pulling the other leg back. Land as in the previous excercise except that the takeoff leg is now forward.

Running-in-Air Exercises

8. Place class in groups of three, matched as to height and weight, all facing the same way. The middle member places her hands

on the shoulders or at the elbow of her partners' bent inner arm and springs up so that her arms are straight, *or*, with the middle girl facing the opposite way, she places her hands on the forearms (at the joint) of the arms (bent at right angles) of her partners. The teacher then controls the movements of the performer as follows:

a. "Bend the free knee to waist height."
b. "Straighten that leg forward."
c. "Drop that leg straight and at the same time bend the other leg."
d. "Straighten it and join it (at right angles to the body) with the other leg."
e. "Partners change."

9. Repeat this exercise having the cyclic movement performed freely. Make sure that:
   a. *At no time* does either leg pass farther back than a direct line between head and ground
   b. The chest is held high
   c. The knee does not rise higher than waist height
   d. There is continuous movement
   e. The performer's seat does not stick out.
10. Freely (not in the pit) have the class practice the running-in-the-air movement from the ground. The landing on the ground should be made by bringing both feet together.
11. Move class to the runways (or to the side of the pit) and have each performer trv to run off the ground. perform a run in the air, and run out of the pit from a 7-pace approach. Don't demand a landing.

The Landing

12. From a longer approach (about 11 paces), demonstrate a gradual buildup into sprinting speed, a powerful forward-upward takeoff—a shooting of both legs forward and a landing with legs extended at right angles to the trunk, arms and hands high. The landing *must* be made on the seat, thighs, and calves *at the same time*. Gather the class around and show the "extra" distance from seat mark to heel marks stating that:
   a. The legs can be maintained in front of the body by muscle strength.
   b. The legs can be extended *because* of the erect position of the trunk and the freedom of movement occasioned by the running in the air action.

To prove the point that "the leg can be maintained in front of the body by muscle strength," have each pupil stand erect, raise the free leg (keeping the takeoff foot flat on the ground) in line with the waist, and maintain this position. Then have each press the body to the extended leg's thigh. The whole leg will drop. That is often what happens in the simple sail jump. So keep "chest high" through the long jump.

The Leap

13. Encourage free practice to acquire a sound landing position from a full run-up.

The Takeoff

14. No mention should be made about the takeoff board and no attempt should be made to consciously use it yet. Set high jump (and/or pole vault standards) over the pit about 12 inches from the pit edge. Firmly clamp a crossbar above the standards and suspend from it a soccer ball or volleyball. Have the class attempt to head the ball from a full run-up at speed. *Never place an object in the pit to negotiate or a bar to leap over near the takeoff.* It is not a high jump but a leap for length! In this practice, stress running from the ground. Give the impression of climbing stairs, of rising from the ground as an airplane does.
    Height is very important, but there must to no cessation in the horizontal velocity of the run-up to attain it. Stress also the violence of the *full* stretch of the takeoff leg, and keeping the arms high and the chest elevated always. Try to inculcate the idea of *forward-upward* lift.
15. Raise the crossbar and move it farther down the pit away from the takeoff. Place a springboard or a gymnastics beatboard about 8 feet from the pit, and from 3 paces, 7, 11, and then up to a full run have the participants use the extra height and leverage to drive their body weight *forward* and *upward*—aiming to head the ball *and* land correctly.
16. The last stride is shorter onto the board, as a rule, than the former strides in the approach run. But speed of run and the penultimate stride will determine this. There is a decided dipping of body weight prior to the last stride which, of necessity, must be shorter because the body must spend very little behind or over the takeoff leg if distance is to result.

Here the teacher should compare the last stride in long jump to that in high jump to show the difference. Have the whole class gradually practice the last two strides from a 7-pace and a 11-pace, and a full run-up.

The Use of the Takeoff Board

Working in pairs, one helping the other, individuals practice with 3, 7, 11, 13, 17 sprint strides simply to:

a. Know how near takeoff board the springing leg strikes.

b. Check length of run-up and regularity of stride.

Partners tell the jumper the position of the takeoff foot in relation to the board and the corresponding adjustments are made at the far end of the run-up. Sometimes this practice can be performed on the grass verge on each side of the run-up. If this is so, the measures can later be transferred to the run-up. There will be a little adjustment necessary, as will be so *every* time an athlete measures the run-up; for conditions, circumstances, and athletes vary. With much practice from measured marks the athlete will know where her steps are to be. Do not introduce check marks (if necessary at all) until much later in individual performance.

The above can be taught successfully to about 30 students in 45 minutes' working time or two lessons each of 30 minutes' working time. If it is necessary to take two lessons to teach these progressions, do not carry on the second lesson from where the first was stopped but use all the progressive steps, repeating them fewer times. This will act as an introduction to the strenuous part of the lesson and help to establish individual form.

How to Introduce High Jump Techniques

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All who wish to perform the high jump should be taught one style at a time. After one of these styles is mastered, the other should be introduced; then, and only then, should each pupil decide on the style she likes. Do not suggest that a participant copy pictures in books or a friend's style. Style is built on the peculiarities of each individual. Basic factors such as run-up and spring are the same, but not such things as arm positions, head positions, and hip clearance. These are built on the mobility, strength, type, and even temperament of pupils.

To encourage purposeful activity by many participants rather than excellence of only a few, it is essential to build a method of presentation suitable to the age, the numbers, and the facilities in the available time.

Continuity is the key to enjoyable learning, thus any method devised should have this as its core. Progression, correction, and encouragement must be maintained throughout each lesson.

It is not at all difficult to introduce high jumping to 30 beginners in 30 minutes so that all will have achieved some satisfaction and a certain degree of success. In three periods of 30 minutes each, all but the most complex faults can have been dealt with and two basic forms of jumping experienced.

The following is one way to introduce high jumping to a class. The lesson can be taught equally as well indoors as long as a suitable landing surface is provided.

To Teach the Western Roll

1. See that the pit is deeply dug and that a spade and fork are handy so that the pit can be turned regularly.
2. Put the bar, preferably a tubular metal one, at a height of about 1½ feet. Stand all the jumpers facing the bar in a line, one behind the other (leader 10 feet away).
3. The teacher tells the class to run up one after the other and to hop over the bar, taking off from one foot and landing on the same foot.
4. As each one hops over the bar, the teacher calls out the takeoff foot (i.e., the foot which stays on the ground longer), and the

pupil is told to go to the same side as the takeoff foot, facing the bar.

5. The pupils should not go further to the right or left of the bar than at an angle of 40 to 50 degrees. The teacher marks the starting spot with a flag or a scratch line.
6. Hop again. The teacher should check to see that the pupils are hopping from the leg nearest the bar. Very few will make a mistake, but some inevitably will. Help them immediately to decide their better jumping foot, and there will be no need for further concern. Most will jump from the left leg.
7. Next, tie a football bladder on a string at the highest point between uprights and tell the pupils to spring up and head the bladder.
8. After establishing the idea that it is a high jump, take down the bladder and get the pupils to "kick, then spring" over the bar. This must be learned.
9. Place a handkerchief in the pit, about 6 inches from the edge of the pit and almost under the bar. Tell the pupils to hop, and you will clap your hands when they are at the high point of the jump. When you clap, they are to drop their ear onto their shoulder, put their inner hand into the pit, and pick up the handkerchief. Repeat many times, but always make sure that each hopper gets *up* before you clap. Do not allow to go unchecked a turn off the ground into a jump. Get the pupils to spring, then turn.
10. Finally, blend all steps above into one leap and get the jumpers to tuck the takeoff leg out of sight.

So far nothing has been mentioned about the takeoff spot or the run-up. Until that stage is reached, do not mention it.

The Run-Up

An athlete can never initially make her own run-up. Put learners together in pairs and get them to help each other as follows:

One stands with her back close to the bar (set at four feet), so close that she almost touches it. The other leans forward and gently lopes in the line of the run-up as though she were to jump a long distance away. Starting with her jumping foot, at her seventh stride her partner makes a mark of the toes of the jumping foot. This is that jumper's mark for that day. Each day a person jumps, the mark is slightly different, due to variable weather and surface conditions. The distance from under the bar is measured. This will be approximately the distance of the seven-pace run. Practice and experience will help in determining this exactly for every

competition. Encourage pupils to measure the run-up every time they train.

The Takeoff Spot

The takeoff spot should be noted next. It is about 2 feet 9 inches from a spot under the center of the bar and not further than 4 feet 9 inches from the bar. This distance will alter with each jumper and is determined by length of leg, speed of approach, and height of athlete.

The takeoff spot should be the same for any height jump by the same jumper.

Speed

The run-up should be easy, relaxed, and slow, except for the last three strides which are quickened. It is the duty of the coach to watch out for the following points: Although the last three paces are quicker, they should not be shorter, but should increase so that the last stride is the greatest. These three strides are termed the "gather"; the athlete mentally and physically prepares herself for the upward leap.

To Teach the Straddle Roll

1. Place the bar at a height of about 1½ feet.
2. Hop over the bar to establish the side of the takeoff.
3. Head a bladder (still hopping).
4. Bar at a height of 2 feet. Take off from inside leg, turn onto other leg, and land on it. All will be able to do this; but if the bar is raised, unless the jumpers spring up, they will be unable to pull the second leg out of the way.
5. Bar is at a height of 2½ feet. The jumper springs, and when the teacher claps hands, she should drop the head and outside arm into the pit.
6. This is the easiest jump devised, and no difficulty will be experienced (until the greater heights) if stress is laid on vertical spring and a dropping down of the body over the bar with hands reaching to the pit. This will help to clear the takeoff leg, which should also be raised up.

Stress the steps of high jumping in the following order: First, the run-up and the takeoff spot; second, the kick and upward spring; and third, the style used. The combination of the complete coordination of the whole jump and the personal control of the spring exerted by the jumper results in the achievement of height.

Coaching Beginners in the Shot, Discus, and Javelin

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For all three throwing events it is essential that the basic warm-up procedure be followed before each training session as well as before competition. *Recommended basic warm-up*: ¼ mile jog, about four 40-yard sprints, 10 to 15 minutes calisthenics for all important muscle groups, easy fell-throwing to the side of the throwing area.

Shot Put

Always enter and leave the ring from the rear. The shot should be resting on the lower knuckles of the hand, not in the palm, and it should not be gripped tightly. The elbow should be raised, and held relaxed, not rigid for balance.

With eyes always straight ahead, remember to glide across the circle, not jump. Land with the body weight and the shot over the right leg, with head, shoulders, and eyes facing backward. Begin the put by pushing hard with the right leg, following with the hip, chest, and arm in a smooth, continuous motion. The follow-through reverse should come as a natural result of the drive from the legs and the body. The thrower must never leap up off the ground before the put is made.

Do not move the shot off your neck during the glide across the circle. Do not duck head and shoulders down after the put—the head and shoulders should remain at an elevated position after the lift and delivery. Watch the position of the feet and the progress across the circle and throw the put along a straight line.

In teaching the event do not spend too long working on the standing throw; move as soon as possible to the entire technique.

Discus Throw

The warm-up procedure is similar to that in the shot. Enter and leave the circle from the rear. The instructor should stress the proper hold and carrying position of the discus from the beginning. The discus is released from the index finger with the arm extended to the side,

and it spins clockwise as it cuts through the air. The control of the release should be taught from the standing position, then instruction in the turn begun as soon as possible.

Keep the arm, shoulders, and head relaxed and back—shoulders and head parallel to the ground. Eyes look always straight ahead. Bend the left knee into the turn. Make a neat, rhythmical, well-balanced turn with legs and hips preceding the upper body. Land with the arm back and head and shoulders facing back and over a bent right knee. Push and rotate off the right leg, throw the chest and head up and out as the arm follows through in wide sweeping motion. Follow through after release. Do not "scoop" the discus; keep it in its natural orbit.

Javelin Throw

The proper warm-up involves jogging, followed by wind sprints, and at least 10 minutes of stretching exercises, stressing those resembling the action of the javelin throw.

Select and perfect one of the accepted handholds. Learn to keep hand, fingers, and wrist relaxed. By throwing from the stand learn to control the flight of the javelin. Follow this by learning to throw from walking up into the throwing position. Deliver the javelin over a wide throwing stance over a straight left leg.

First make short throws, driving the javelin into the ground, bringing the elbow and the javelin tail through high. Learn to begin the throw from the straight right elbow, keep the point in, close to the body, and the tail high. Next learn to deliver the javelin with a slow run and short steps. The right shoulder, head and eyes are pulled back and around to the right with the elbow straight.

Always keep the arm relaxed, even limp, and straight back in line with the throw. Keep the javelin point low, about eye level. Pull the javelin through, elbow leading, at the throwing angle of about 30 to 40 degrees. The javelin inclination during the transition from the run-up by the delivery should be the same during the throw.

Beginners must be taught the importance of the proper run-up with exactly measured check marks and should practice a very relaxed over-the-shoulder carry of the javelin during the run-up. The proper speed of the run and its transition into a forceful, well-executed delivery is crucial to effective javelin throwing. After a throw is made, turn and walk back from the foul line—never step over it.

Winter and Spring Preparation

The finest supplementary sport for track and field is basketball. During the winter months, train for strength at least three times a week. Use weights, medicine balls, push-ups, sit-ups, chin-ups, strength calisthenics together with basic acrobatics and balance drills. Twice a week, try a cross-country run—even in the snow—up to a mile and a half depending on the weather. Build a good supply of strength and endurance in the winter. If possible work also on essential points of throwing techniques. In the spring, begin intensive work on technique, starting from the elementary. Sprinting, repeated short dashes (starts plus explosive 30-yard runs), high jumps, and hurdles are a perfect supplement to a well-rounded thrower's workout.

A good coach is a friend and a leader. Gain your girls' confidence by an unpretentious presentation of well-learned material, by ever improving technical knowledge and credibility of practical demonstration. Girls like to feel close to the coach; be interested in their welfare, but remain firm in your demands. Require your girls to keep a diary of their training; check it and remind them of areas they happened to neglect. Discuss freely the physiology of menstruation. Know when a girl is indisposed, but advise continuation of training, even though in reduced intensity to suit individual cases. Do not permit the wearing of earrings, rings, and other jewelry on the training field. Also discourage long nails, hairdos obstructing vision, girdles. Teach your girls hygiene, the basic physiology of training, good eating habits, the importance of good rest. Stress positive thinking and self-discipline; teach your girls to think for themselves. Lead them to understand their events, to read technical literature, to ask questions.

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Improving Performance in the Javelin Throw

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The javelin throw is a complex neuromuscular skill requiring strength, speed, and coordination. To perform well in this event, one must spend many hours conditioning the body and learning the techniques of approach, cross step, and delivery. This article is written for the young lady who has mastered the fundamentals of holding and throwing the javelin and now seeks to improve her overall performance.

STRENGTH DEVELOPMENT

It is well known that girls and women are not as strong as boys and men—partially because of female physical characteristics and partially because of the culture in which they are nurtured. Because most girls have weak arms, they are at a great disadvantage in a ballistic event like the javelin throw. Not only do they lack the strength to throw with force, but they are also more vulnerable to injury.

Javelin throwing places great stress on the whole body. The run-up or approach, requires leg speed; the crossover and breaking action of the forward leg demands stamina; and the explosive release of the javelin is dependent upon superior strength and tone in the tendons, ligaments, and muscles in the entire upper arm-shoulder complex.

To develop strength and stamina, most javelin throwers find it necessary to involve themselves in a year-round conditioning program. Such program may or may not include work with weights, but must include extensive overloading of some kind. It is recommended that the following exercises for strengthening the musculature of the legs, abdominal area, lower back, thorax, shoulder girdle, and arms be used. (During the off season, i.e., fall and winter, these exercises should be performed three times each week and during the competitive season, twice a week, with at least two days rest prior to competition.)

Exercises

Legs. Extensive running, including 30- to 40-yard sprints, repetitive cross stepping, and short bursts up stairs or hills, is a must for the serious athlete. In addition to running, many javelin throwers perform half-squats with a weight that they can adequately lift 20 or more times.

Abdominal area. Since the long-arm pull so essential to good throwing is initiated by the abdominal muscles, special emphasis should be given to their development. Trunk flexion from the supine position with the performer swinging the hands to the feet vertically above the body is an excellent explosive activity. Leg lifting from the vertical hang overloads both the hip flexors and abdominal muscles. Sit-ups in the hook lying position which involve both flexion and trunk twisting are also excellent strength exercises.

Lower back. For optimum performance, the javelin thrower must have a strong, flexible lower back. Recommended is the low back lift, performed on a waist-high table. The athlete lies on the table in the prone position, with the upper half of the body extended beyond the end of the table. (A teammate may lie on the athlete's legs to support her in this position.)

Holding the hands behind the neck to increase resistance, the athlete alternately lowers her head and thorax toward the floor (in an inverted L) and lifts her head and thorax upward as high as she can. When sufficient strength has been developed, a ten-pound weight can be held behind the neck to produce greater resistance and subsequently more overloading. This exercise should be repeated from 15 to 20 times for maximum results.

Thorax. The powerful pectoral or "throwing" muscle must be highly developed for maximum throwing force. The push-up is an effective means of increasing pectoral strength. An even better exercise is the bench or prone press with a barbell. This exercise is to be performed under supervision and should involve a weight which can be pressed from 10 to 15 times.

Shoulder girdle and arm muscles. Both the elbow and shoulder muscles and joints are vulnerable to injury in the javelin event. To prepare them for intensive activity, a performer should engage in months of prethrowing conditioning, including strengthening and stretching exercises, i.e., push-ups, chin-ups, and rotary swings with the arms. The two-arm curl, straight arm pullover in supine position, French curl, and military press with weights also constitute an essential part of the conditioning program.

Throughout the year the javelin thrower should engage in some type of throwing each day. Many top performers have found that passing the football or throwing the basketball constitute good

indoor training. Whenever possible the football or basketball should be thrown from the rhythmic glide-hop approach used in the javelin event.

SPEED

Because throwing for maximum distance is determined by the angle and velocity of release, the skillful performer in the javelin event seeks to execute a powerfully coordinated throw at the end of the fastest possible approach. Hours of training are expended in the refinement of this coordinated act (1) to increase approach speed, and (2) to perfect timing so that the greatest possible horizontal speed can be converted into the vertical throwing action.

According to recent research, running speed can be increased by developing muscular strength and flexibility. Hurdling is a particularly useful exercise, and repeated drill over several regularly spaced hurdles tends to produce the consistent stride pattern so essential to a fast, relaxed approach. The ability to accelerate during the final five or six steps is of utmost importance. The serious performer gives special attention to this phase of her approach by repeatedly practicing the final cross step action.

TIMING

The speed of the approach varies significantly from performer to performer. This stems in part from the momentum produced by a given individual during the run-up (momentum = mass x velocity). When it can be converted into throwing force, momentum is an asset to skillful performance. But for the beginner, momentum may be a liability. Timing, therefore, must be continually stressed.

Exercises

Following an intensive initial warm-up, few throws should be made at less than maximum speed. To practice otherwise is to establish a sequential pattern that is not realistic to success in the event. Since hard throwing is not possible every day, the javelin thrower should devise drills which permit repetitive action with proper form at optimum speed, but which do not require continuous all-out throwing.

One such practice activity is the "daisy picking" drill, which includes running, cross stepping, and throwing. The performer runs

gaily across an open field with the javelin carried overhead, the tip pointing down toward the ground. At frequent intervals she fixes her attention on some weed, spot, paper, etc., initiates her cross step, counting 1-2-3–cross-*pull*, and sticks the javelin forcefully into the turf with the correct throwing motion.

Other javelin throwers have found that repeated cross stepping (referred to under the heading "Speed") has proved to be beneficial to the development of timing. This drill permits the athlete to perfect the rhythmic glide-hop motion (actually a cross step-glide-break-pull sequence) which must precede all-out throwing.

Conduct of Meets

Organizing and Conducting Track and Field Meets

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Track offers challenging and exciting competition that satisfies both physical and psychological needs of girls and women. The body is developed through the vigorous training and performing that track activities demand. Desirable character traits are developed through regular training schedules, self-testing events, and challenges afforded to execute an excellent performance.

Track and field activities are relatively new for girls and even though Vassar College held a track and field day as early as 1895, until fairly recently, organized track and field activities for girls have been practically nonexistent. Since educators agree that track and field has great social, intellectual, and physical implications for those involved, it is important to make possible a fuller realization of its potential through well-conducted track meets. An energetic and interested coach can easily get track and field started in a new community. An all-school field day with lots of relays and jumping and throwing contests, including novelty and fun events, will give impetus to the program. The attendance of both teacher and students at clinics and boys track meets is valuable; a visit to college or AAU meets could also provide incentive. A good physical education instructional unit in track and field is an ideal place to start. Showing Olympic Games films and other track and field films will motivate interest. A guest speaker outlining advantages of track and field may be helpful. A good coach will read, read, read; know the rule book; study the guides; and subscribe to leading periodicals. The better written articles should be kept in files made available to the track squad and good track and field textbooks purchased for teacher and pupil use. No one teacher can cover everything in her teaching. The fast runners in each class are easily identified. They should be encouraged to report for track and field practice. Every girl should try out for all the different events, find where her strengths lie, and discover those events she most enjoys. Track and field units of instruction in physical education class and intramural

activities involving running, jumping, and throwing contests afford good opportunities to get girls interested in track. The track coach can visit the elementary and junior high schools and can give encouragement by talks, demonstrations, films, and the promoting of meets which will stimulate interest and participation for future squads. The formation of GAA's for junior high and intermediate grade school girls is a way of getting high school girls to work as student leaders with younger girls. Through such training sessions the older girl is challenged to know her events and an extra opportunity for practice sessions is afforded. Track team members will encourage others to participate if the program is attractive, stimulating, and self-satisfying. Potential performers may be discovered through the fitness testing program.

Challenging and interesting practice sessions will keep athletes out for track. Early workouts should be easy ones that are fun to do. Essential equipment should be provided although track is an activity which can be enjoyed with a minimum of equipment. Each member of the squad can be instructed to groom her own replacement from the very beginning. This ensures a continuing track program. Boys and girls training simultaneously is a good technique since the girls learn much by observing the superior performances of the boys. The boys in turn work harder because they appreciate recognition and also come to recognize the ability of girl athletes. Practice sessions should be held at least three days a week but daily practices are more desirable. These may be organized by events and squad activities. The entire squad needs to warm up by jogging, stretching exercises, and wind sprints. This is preferred over mass calisthenics or large group running. For variety, partner running affords a good opportunity to employ interval training in an interesting way. One partner races the prescribed distance and then tags his partner who runs and then tags the first partner again. Any number of partners may compete against each other and the number of wind sprints may vary from practice to practice. This partner relay may also be used by groups of three or more, each group competing against the other. For practice on events, leaders are chosen (usually a junior or senior high school girl), and are given mimeographed sheets outlining their responsibilities and daily practice routines. The coach is thereby allowed to move from one area to another supervising, making corrections, and suggesting ways for improvement. Event meetings for general discussions, analyzing movies, and evaluating new techniques are held as often as needed. Squad and intrasquad meetings are effective in creating good rapport among team members through honor rolls attractively displayed, pictures, and write-ups in the school newspaper, and by keeping and displaying the best school records. School handbooks with past track records and individual records call attention to good performances.

Organizing Track Meets

The promotion of a successful track meet involves numerous details. The kind of meet scheduled will depend on the number involved and the kind of meet that will best serve those involved.

A *postal* or *telegraphic meet* is the competing of two or more schools at each school's track in events previously agreed on. The results are called or telegraphed to establish the winners. This is advantageous in that no travel is involved and yet competition still occurs. Competing against a mark or a stop watch however, is not nearly as challenging as a live personality. The comparative results of both individual and composite team scores may be used to determine the winners.

A *dual meet* involves the active competing of two schools together. A dual meet between arch rivals is a good promotional device to start the season. This kind of meet can be conducted in a short period of time and can be an interesting event for spectators. Safety regulations will need to be established to control the number of events an athlete may enter. Best times should be submitted to determine lanes.

A *double header meet* involves both boys and girls. The competition is the same as in a dual meet, boys against boys and girls against girls. An interesting event to add to this type of meet is a coed relay.

A *triangular meet* is conducted between three schools. This type of meet is more interesting than a dual meet, affords greater competition, increases team effort, and is more enjoyable for both spectators and participants.

An *indoor meet* may be held in a standard size gym. Special events will create and maintain interest such as high jump, relays, indoor shot, standing broad jump, and running jump utilizing mats and other safety equipment scheduled three to four weeks before the first outdoor meet. A demonstration consisting of passing the baton, starting, high jumping, and conditioning may also be valuable in selling the track program.

The *big track meet* may be a four-way meet; a county, district, or state meet; an invitational, relay, composite scoring, or Olympic type meet; or an intrasquad, intraclass, or interclass meet. These meets require much advanced and careful preparation since numerous details involving large numbers of participants must receive attention. There will be increased difficulty in providing dressing rooms, roped-off warm-up areas, additional equipment, and correct advance publicity. It will be necessary to have heats and trials. A meet this size will require officials, and scoring will be more

involved. These meets can be time-consuming, and if there is a lag between events spectator interest will be lost.

A *relay meet* is a big meet with competition between three or more schools in relays alone. Both shuttle and pursuit relays could be used. The coed relay would be a good event to have.

A *composite scoring meet* is one involving two or more schools in which the contestants participate in their various events and the scoring is accomplished by teams. The total of the times of all performers on a team for a particular running event would represent the team's score for that event. For field events the team's score would be the total distance or total height. The number of places for scoring in an event would be determined by the number of teams entering. The points awarded would depend on the number of teams–number of places. In the event the number of members on each team cannot be equal, the team's score for each event would be the average. In this type of meet individual effort is recognized only as it contributes to the team's score. This might be considered by some as a disadvantage.

Intrasquad, intraclass, and *interclass meets* are good screening devices and excellent procedures for culminating the track and field unit of the physical education classes.

Time for meets. Springtime calls for track meets. Twilight and evening meets are popular. The best time for a large meet is on Saturday near the middle of May. If schools involved are near each other the meet may be scheduled within the school day. If travel of any distance is involved, however, Saturday meets are preferable. The length of the meet is an important matter as far as spectator interest is concerned. The average spectator will enjoy a meet that can be completed in an hour and a half. The field events need to be started at least a half-hour earlier than the running events.

Number of meets. A good schedule would consist of four to six home meets and one large invitational meet each year. A trip for the track squad participating away from home can contribute social and psychological values.

Promoting the meet. Using interested businessmen, former track stars, and women interested in girls sports to serve on committees will be most helpful in getting the necessary jobs done. A ticket committee can see to the method of selecting contestants, establish qualifying meets, do the timing at the qualifying meets, and report to the final meet as officials. A special events committee would be responsible for adding color to the meet. Well-located bulletin boards with articles, up-to-date features, and action pictures colorfully displayed can advertise and promote both meets. The school and community newspapers can be utilized to call attention to the meet. School assemblies with the introduction of the squad in

uniform also create interest. Each girl might answer a definite question concerning rules or scoring. Having an assembly in the stadium a few days before the track meet season starts is a good way to promote enthusiasm. A nearby school invited to participate with three girls in each event, one event to each girl, no score, a race every six to eight minutes will help to prepare the athletes for the season. This is a good time to hand out wallet-sized cards in school colors printed with the track schedule and school track records on them. The coach could appear before civic, service, and church groups to ask their help in publicizing and supporting the meets. Letters should be sent to schools at least four weeks before the meet giving general information so that teams may be readied. About two weeks before the meet, entry blanks can be sent out; the events scheduled will be a result of the entry returns. The time schedule and detailed instructions on the order of events, location of dressing rooms, practice areas, safety regulations special requirements, and other pertinent information should be provided each school. The entry blank indicates deadline for entries and announces when the scratch meeting is held. There will be a place on the entry blank for the events a participant wishes to enter and a place to list the participants' best times.

Meet management. The field should be arranged so that spectators are allowed to view all of the events without any trouble. Pits and weight areas should be located in the center of the field, close to the edge where the spectators will sit. Sand bags, sawdust bags, dirt mounds, and foam rubber for high jump pits and broad jump pits can be placed on the playing field and removed after the season closes. Finish lines should be in the center of the field, by the spectators. It is good to rope off the first four rows of seats so there will be an unobstructed view for all. Only competitors and officials should be allowed to remain on the field. Good pre-meet planning consists of a well-developed system of check lists. Faculty members can help supervise ticket sales. A physician should be in attendance at the meet. Student helpers can assist in preparing physical facilities, doing paper work, greeting visiting teams, and help keep equipment organized and repaired. A public address system is a must. The press, radio, and TV personnel should be provided the facilities they request, given pre-meet information, copies of the schedule, and background information on the athletes. A suggested list of events follows:

Sprints (50-75-100-220)
Standing broad jump
Running broad jump
High jump
Javelin

Shot
Discus
Hurdles (50 and 80 yard)
Softball throw
Runs (440 and 660 - work toward 880)
Relays (pursuit and shuttle)

The order of events should be arranged for expediency. It is a common practice to begin the field events about a half-hour before the running events. Running events take precedence over field events if a participant is in both simultaneously. The running of the events need not follow a set pattern. It is well to experiment with the order of events and make changes for variety.

Meet equipment. Equipment necessary for a track meet will depend on the kind of meet and events scheduled. All markings and regulations of the track should be standard. The track should be in the best possible condition. Extra hurdles need to be on hand in case of breakage. Starting blocks, a wheelbarrow to transport them in, and hammers to set the blocks will save time. A steel ring and toe board set to specifications for the shot put is needed. Telephone poles may be used for stop boards. Large sturdy signs to mark the curved lines so that the fans can tell the approximated distance recorded on each put are helpful. Another method of marking each put is to use flagmarkers in the participants' school colors. A white cloth flag set at the national record in the putting area is an incentive to the athlete and a guide to the fans. The student helper carries the shot back rather than throwing it and the athlete meets him halfway. A similar system for marking the spot for each contestant can be used in the discus contest. The student helper runs the discus back and does not attempt to hurl it. For the broad jump a white take-off board is recessed. Clay placed in front of this board will show a foul. Small red flags about two feet high placed at each side of the take-off board show the jumpers where the board is. A marker can be used to show the leading distance. A broom, rake, spading fork, shovel, steel tape, putty knife and putty, and metal drag or wide boom to rake down runway are also needed. All officials and helpers should be kept on the side of the pit away from the spectators. For the high jump a height marker large enough to be easily seen in the stadium is needed. In addition to the above special equipment the following general equipment is required: Check lists; stop watches (timed and checked regularly); finish yarn or gauze; batons; clip boards; pencils; event forms; first aid kit; elevated steps for finish judges; victory stand; scorebook; tables, chairs, benches; starting gun and shells or clappers; whistle; fluorescent sleeve; small blackboard to see smoke on a sunny day; large blackboard in center of field for

team members: (time schedule, order of events, etc.); large scoreboard to show results.

For a large meet it will be necessary to have preliminary heats and trials to determine who the finalists will be. The track referee has the responsibility of placing competitors in heats. The DGWS *Track and Field Guide* lists the proper pattern to follow in forming heats. In the event a track has eight lanes and there are from 25 to 32 participants it will be necessary to have four trial heats, with four qualifying in each heat, then two semifinal heats with four qualifying in each heat which means there will be eight in the final event. In straightaway races the two fastest times are placed in the two middle lanes and the remaining competitors placed to the right and left according to their qualifying time. In races run on a curve the fastest time is placed in lane number one and the remaining competitors placed according to their qualifying time. In case of a dual meet when best times are not known the visiting team may be assigned the odd-numbered lanes and the home team even-numbered lanes. When time is known, determine the fastest girls and place them in different heats. A teammate is not placed against another in the same heat if it can be avoided. In field events the best competitors compete last. In case no scores are available, position is determined by drawing lots.

In field events each competitor takes three trials and the best seven competitors each have three additional throws. Each competitor shall be credited with the best of all her trials. One more finalist than there are places to be awarded shall be chosen. The one with the best throw in the preliminaries would throw last.

Officials. Each official must be assigned well in advance of the meet. It is good to make these assignments before the season begins and to place the official in the same assignment from week to week and year to year. A list of duties of each official should be mimeographed and the rules pertaining to his event along with a list of his duties should be taped to his clipboard for easy reference. Members of the coaching staff, other faculty members, girls from officials clubs, boys from the track team, and interested leaders in the community with track experience are good sources for officials. All officials must be properly identified with ribbon or tags.

The DGWS *Track and Field Guide* lists officials for meets where three or more places are being awarded and describes the duties of these officials.

Scoring. A team's score is reflected by the number of places to be counted. If there are five places to be counted, points are scored 5 - 4 - 3 - 2 - 1. Points for relays with five places are commonly scored 10 - 8 - 6 - 4 - 2. In the event of a tie by two or more competitors for any place which receives a score in either track or field competition,

the points shall be divided equally between the tying competitors. Ribbons with the name of the meet, the date, the event, the division, and the place are excellent awards for the place winners. Plaques or trophies may be awarded the winning team. It is of utmost importance that winners be acknowledged as soon after the event is completed as possible.

The track athlete must be properly conditioned for competition and every measure taken to ensure safety. A complete physical examination is required, and health insurance on all the girls should be strongly encouraged. Before each practice or performance session there should be sufficient warm-up. The *Track and Field Guide* suggests that three events per day is a safe limit for a girl to participate in.

Adding color and pageantry. Here are some ideas to add color and contribute to a smooth running meet:

1. The eight or so qualifiers introduced by lanes before the start of a race. The top three or number of winners awarded their ribbons or medals before another race introduced. The awards received as they are in the Olympic games on a stairstep platform in front of the stadium adds color. Make use of a bugler in giving awards.
2. The announcer calling the spectators attention to various areas of the field and commenting on the background of various winners. Reminding the spectators of past records and calling attention to records that are shattered or threatened adds excitement.
3. Begin on time. Permit no lag between events.
4. Make proper provision for claims for records.
5. Make the most of bands, cheerleaders, crowning of queens. Boy and Girl Scouts may effectively be used as color guard, ribbon girls, ushers, and student helpers.
6. Have track watered and dragged prior to meet. Be sure all equipment is in good repair and neatly arranged until time to be used. Have lanes well marked.
7. Ask a prominent citizen to serve as Honorary Referee.
8. Prepare an interesting display of trophies and awards along with pictures of the track squad in a convenient store window uptown.
9. Make arrangements for refreshments to be available to the spectators.
10. Have participating athletes parade the track led by a color guard.
11. Lime used for marking should be free of possible infection. Try to find some substance other than lime for marking.

12. A first aid and rubdown station is highly desirable. Towels and blankets should be available.
13. One person should be responsible for checking out and in stopwatches, tapes, etc. to officials.

Follow-up procedure. Care should be exercised in seeing that the results of the meet are correctly reported and a result of the meet sent to visiting teams. The meet itself should be evaluated and suggestions noted for improvement in the future. Thanks should be extended to the groups that served in conducting the meet. Student helpers can be recognized in school assemblies and through the school paper. The track squad should discuss the conduct and performance of their team, noting strengths and weaknesses.

Conducting a meet with little equipment. Track activities can be conducted with a minimum of facilities and equipment. Some equipment can be borrowed, constructed, improvised, substituted, and some can be done without. As long as the participants are actively involved in safe and interesting activities and are being challenged to improve themselves, the track program has achieved a measure of success. A running area can be a playing field, paved area, little used street, park area, or golf course. The county fair grounds can be utilized for staging meets. The horse track can be marked and used for running events. The shot, discus, javelin, and other throwing event areas can be marked in the center of the field, and the high jump and broad jump pits can be constructed just off the horse track but still near the grandstand. Sand is more desirable for the broad jump pit but sawdust can be used. Bales of straw are available from farmers to outline the high jump landing area and this area can also be filled with shavings of sawdust. A cane pole can be used for a cross bar, but an extra supply will be needed since they will break easily. Hurdling can be learned and practiced over cardboard boxes of the same height. Girls are less afraid of hurdling cardboard boxes than they are wooden or metal hurdles. Hurdles may be constructed in the school workshop at a minimum of expense. The throwing of softballs and basketballs can be substituted for shot and discus if this equipment is not available. A megaphone or ranger horn can be substituted for a public address system. If a circular track or space for one is not available, the longer distances such as 220 and 440 can be run by lapping back over one-half the distance. Shuttle relays may supplant pursuit relays. No records will be established but girls will be learning track and field, developing healthy bodies, and experiencing self-sufficiency, physical grace, and inner confidence. In starting track for a new community, first condition the girls, letting them experience the different events, and then getting them involved in competition. Get them running—cross country, barefoot on the grass, in the gym on rainy days, anytime. They can be

encouraged not to ride so much but rather to run to school, to the store, just run for the sheer pleasure of being able to run. After a complete physical examination to ensure a strong body, they can be worked far beyond the point when they think they are "too tired". There needs to be a sufficient warm-up period with jogging, stretching exercises, and wind sprints; then work past fatigue so they may experience second wind. A lack of facilities or a lack of equipment is no excuse for failing to have a track program. Starting guns and metal tapes can be borrowed, jumping pits can be constructed, a track and hurdles can be improvised, certain events and equipment can be substituted, paper ribbons and scoring materials can be made, and starting blocks and stop watches can be done without. Once the program is started, the addition and improvement of facilities and equipment can speedily follow. Track and field has something to offer all girls. No other sport can be indulged in by so many, and no other sport offers such possibilities to the average girl and at the same time such challenge to the born athlete.

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Planning and Directing A Track and Field Meet

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The duties of a track and field meet director are many, and long hours of preparation go into producing a successful meet. The director should secure assistance by forming a committee. She, with her committee, will plan the following general aspects of the meet:

Set and clear the date: Two or three months in advance, choose a day that is not congested with other festivities such as a holiday, sports events, or school activities. Check with a few other schools or clubs.

Reserve the facilities: At the same time the date is established, the track and locker room facilities must be reserved. Two or three months is not too far ahead if the track is used by several schools and outside organizations. In making your reservation, check with such persons as the boys' track coach, principal, baseball coach, park department, activity coordinator, custodian, and district coordinator.

Select and order events: (If this is not set by policy) The time allowed for each of the events depends upon the number of trial heats needed and on the experience and efficiency of the officials and competitors in the field events. Remember that hurdle races and relays take longer than flat races and thus need an extra five minutes. The long jump usually draws a large number of entries and takes additional time to allow for the long approach, measure, and smooth the pit. Allowance should be made in the order of events for girls to double in the sprints, and adequate rest should be provided for other girls to double in the longer races.

Organize information sheet: This should contain all the pertinent facts you want to tell the coaches and athletes about the meet. It should include such things as location of dressing facilities, types of runways and track surface, warm-up areas, scoring and awards, entry fees, equipment provided, check-in time, high jump starting height and other useful information.

Compile the list of equipment: Four weeks before the meet, check to see what you need to purchase, order, or borrow to provide complete equipment. Know where all your equipment is located and

that it is in good condition. One week before the meet, gather the items together and keep them locked in a convenient place.

Announce the track meet: Eight weeks before the meet, send a bulletin to all prospective entries, such as schools, clubs, recreation groups, or individuals. Posters should be placed around the school and community.

Obtain officials: A roster of competent officials is perhaps the single most important feature of any track and field meet. Knowledgeable people in these positions are a must. Four weeks before the date, contact your prospective officials and request their assistance in performing specific duties. Seven to 10 days prior to the meet confirm their duties with each of the officials and send each a short list of directions. Send them a copy of the rules for their events or refer them to the DGWS *Rules Guide*. It is advisable to hold an officiating clinic in the early part of the season.

Send entry materials: Four weeks before the meet, send out the entry materials which include order of events and time schedule, information sheet, entry blanks, and meet record sheets. *Clearly mark* in large print and in several locations on the entry materials the *due date*, which should be seven days before the meet to allow time for compiling all of the information.

Release news articles: Two weeks before the meet and again three days prior to the meet, the director should get the pertinent meet information to the newspapers in the area. Include a few names of outstanding participants, schools entered, records that may be broken and other items of public interest. Spectators are important for a successful meet, so make your article interesting and exciting.

The director needs a large crew of assistants, about 15, each with delegated responsibilities to be carried out before, during, and after the meet.

Before the meet:

1. Prepare the track and field for competition: jumping pits, throwing sectors, track markings, and marshalling area.
2. Place equipment. Starting blocks should be at edge of track; jumping standards at pit; hurdles at edge of track; shot, discus, javelins at the disposal of the officials in charge.
4. Set up public address system.

During the meet:

1. Shuttle hurdles on and off the track; move the starting blocks to the various starting lines for runners. Pass out and collect relay batons.

2. Run heat sheets between starter and finish line. Run result sheets from finish line to scorers and announcer.
3. Collect equipment as each event is completed.
4. Be at the call of the meet director.

After the meet:

1. Complete the cleanup tasks. Check and recheck the equipment list.

During the track and field meet, the director is in communication with the head field judge, clerk of the course, announcer, scorers, and referee. She keeps the work crew operating smoothly.

At the conclusion of the meet, the director sends the results to the newspapers as well as to the participating schools and clubs. She should keep good permanent records from year to year not only to assist her in planning future meets, but also as a means of enr ching annual meets.

Adaptation of the Pentathlon for High School Girls

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The pentathlon is a test of skill in varied track and field events. Each contestant competes in the same five events, against set standards of time and distance. Points are awarded for performance in relation to these standards in each event. The contestant accumulating the largest number of points in the total five events is declared the winner.

This type of competition on the high school level was attempted to: (1) Give the all-around girl an opportunity to participate in varied types of activities. (2) Create interest among students to learn or at least attempt various skill events. (3) Give experience in competition against set standards of performance as well as against individuals. (4) Add variety to the track and field program. (5) Modify the regular women's pentathlon events to a reasonable level for the high school girl and still maintain a comparable point scale for scoring purposes.

Inquiries were sent to all high schools in the area showing interest in or conducting a program in track and field for girls. These were in the form of return post cards upon which the teachers could check their intent to participate and the number of contestants that they would enter. (The number of contestants accepted from each school may be limited to control the size of the competing group.)

When the cards had been returned and tabulated, entry blanks, in the appropriate number, were sent to each school. These included a place for the contestant's name, school affiliation, her best performance during the current year, in competition or practice, in each of the five events comprising the pentathlon competition, and the teacher's signature.

Using this information, the contestants were divided in heats of three, grouping those with the best times together and working on down through the slowest. The hurdles and dash were run in these heats to encourage better performances by grouping the better runners together. These groups of three were further divided into flights including four groups of three for the field event competition. A minimum of 15 minutes of rest was allowed each girl between events.

The events consisted of the 50-yard hurdles, the shot put, the high jump, the running broad jump, and the 100-yard dash. These are the same events as those in the Women's National Pentathlon with the substitution of the 50-yard hurdles for the 80-meter hurdles and the 100-yard dash for the 200-meter dash. The events were run in the above order, which also coincides with the order in the national event. The modifications were felt advisable because of the generally lower hurdle skill of the average high school contestant and because of the fatigue factor related to an abbreviated training program.

SCORING TABLES FOR PENTATHLON

50-Yard Hurdles

Time	Points	Time	Points	Time	Points
7.0	848	8.0	648	9.0	448
7.1	828	8.1	628	9.1	428
7.2	808	8.2	608	9.2	408
7.3	788	8.3	588	9.3	388
7.4	768	8.4	568	9.4	368
7.5	748	8.5	548	9.5	348
7.6	728	8.6	528	9.6	328
7.7	708	8.7	508	9.7	308
7.8	688	8.8	488	9.8	288
7.9	668	8.9	468	9.9	268

100-Yard Dash

Time	Points	Time	Points	Time	Points
11.5	858	12.5	667	13.5	503
11.6	838	12.6	649	13.6	488
11.7	818	12.7	632	13.7	473
11.8	798	12.8	615	13.8	458
11.9	778	12.9	598	13.9	443
12.0	759	13.0	581	14.0	429
12.1	740	13.1	565	14.1	415
12.2	721	13.2	549	14.2	401
12.3	703	13.3	533	14.3	387
12.4	685	13.4	518	14.4	373

The points for the shot put, high jump, and broad jump were calculated from the same tables used in the National Competition.[1]

[1] *Scoring Table for Women's Track and Field Events.* Council of the International Amateur Athletic Federation, Stockholm, Sweden. 1955.

Those for the 50-yard hurdles and the 100-yard dash were interpolated from the tables for the 80-meter hurdles and the 200-meter dash to correspond as nearly as possible with points awarded in these events.

Organization of a Pentathlon

This type of activity can be easily organized and requires a minimum number of officials. The necessary personnel includes a starter, three finish line judges (with watches), and a recorder. The starter and finish line judges can also be used to officiate the field events. It is important that times and distances be measured and recorded accurately as the number of points depend on tenths of seconds and fractions of inches. It is advisable to have a recorder stationed at a table in a central location to collect the results of the individual events as they are completed. She can then compute the points for each contestant and keep an accurate running score. This facilitates compiling the final scores at the end of the competition.

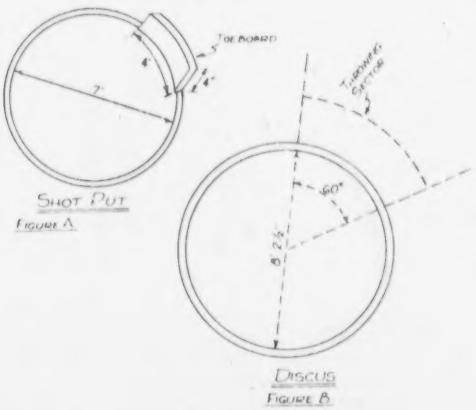

Figure 1

It is desirable, whenever possible, to hold this type of competition on a good running surface and where good facilities for jumping are available. If this is done, the scores of the contestants

may be compared favorably with the National Women's Pentathlon performances.

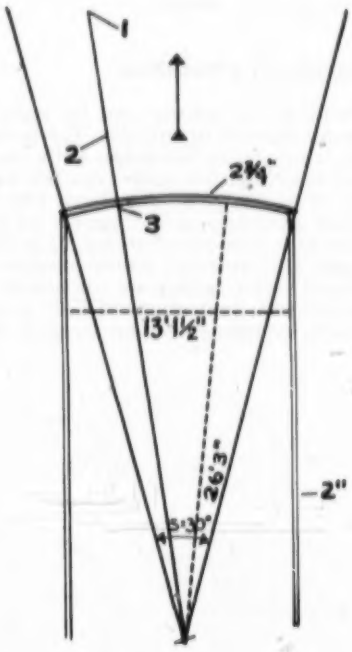

Figure 2

1 Mark made by javelin

2 Tape measure

3 Result to be read

This was a new, different, and valuable experience for those girls who participated in the Pentathlon described earlier. This type of competition is an excellent method of accommodating a large number of schools in a single activity and adds a bit of variety to the regular track and field competition program. It is also adaptable to intramural competition or can be conducted as part of a play day situation as well as part of an interscholastic program.

Officiating

Guidelines for Rating Officials

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In view of the present surge of interest in track and field for girls and the resulting large numbers of participants involved, there is an urgent need for qualified officials to judge the scores of meets. It is imperative that the women who are knowledgeable in track and field rules and in officiating techniques organize clinics to teach others how to officiate. In order to have just and fair decisions for the meets, along with quick accurate judgements, officials must be trained and ratings given.

DGWS rating boards are the proper tool for qualified and interested women to use as the framework for initiating the rating of officials in track and field. Too long have leaders in this area been asked for help in officiating by desperate teachers. The answers to these many requests have been painfully honest: "There are simply not any rated officials here. We cannot supply anyone for your meet."

As a result of these types of requests and recognition of the need for officials, the Long Beach Rating Board initiated its rating program and, as a result, assisted in giving training to numerous women, and ratings to several. It was significant that many of the women who took advantage of the training sessions were students or teachers who had no desire to take the ratings but who, nevertheless, desired the experience in officiating. The format of the procedures which the Long Beach Board followed is presented here to serve as a guideline for other rating boards in setting up their own rating sessions.

Preliminary Organization

If there is track and field in the area at all, there is a need for rated officials. It helps to have at least one truly dedicated person who will conduct the rating program as a coordinator of all its aspects. This may or may not be the rating board chairman, but in any case the coordinator works hand in glove with both the board chairman and the national track and field rating chairman.

The DGWS procedures will be followed, and this *Guide* clearly outlines the policies and instructions for new ratings. The packets are sent to the board chairman with details of the examinations and administration procedures. In almost all areas there will be no nationally rated track and field officials available who can serve as examiners. In this case, the approval of the examiners must come from the national track and field rating chairman, who will review the qualifications of the names submitted to her and issue an approved list of examiners.

Several people in the local areas should be made aware of these ratings, and their assistance and cooperation sought—the state DGWS track and field chairman; the Officiating Executive Board chairman of the Board of Women Officials and her district coordinator; and the national DGWS track and field chairman. Some of these people will be actively and others more distantly concerned, but all will be interested.

Ground Work

In order to have successfully attended practice sessions for training, the coordinator should follow some of these points.

A. Set dates far in advance for practice sessions, examinations and second examination. Use different nights of the week for the practice sessions and choose a school conveniently located for most attendants.

B. Send out informative bulletins to—

1. All unit vice-presidents for girls sports in the area. Ask them to reproduce the flyer and sent to each school in their areas.
2. All junior college and college physical education departments in the area with the request that they inform all of their staff and majors.
3. Girls sports directors of recreation departments.
4. AAU officials chairmen for women's track and field.
5. Other interested leaders, coaches, and sponsors of track clubs or individuals not covered in other categories.

C. Engage the help of athletes from a school or a track club to serve as the performers of events during the practice and rating sessions.

D. Secure the services of qualified people to assist in the instruction of techniques of officiating during the practice sessions and to serve as the examining board. (The experts used for practice sessions can be men, but they should be well versed in the DGWS rules. They might be found in various places: coaches of teams, teachers of track and field, rated AAU officials, ex-athletes who are experienced in officiating.)

E. Present a rating committee and request acceptance by the national track and field officiating chairman. (In remote areas it will be a problem to secure qualified examiners.) Be sure to send specific information regarding the qualifications of each name submitted so that the chairman can make a fair decision concerning the examiners' appointments.

Format of Practice Sessions

It works out well to have instruction in officiating techniques and rules interpretations presented en masse to the candidates, event by event. After a demonstration of the techniques involved by the expert in charge, the candidates are given opportunities for small group practice in officiating each event. The next event is not presented until after the previous one has been covered, both from a demonstration approach and a practice period. The leaders correct the techniques of the candidates, show them proper procedures, and help them understand the details of position, voice, demeanor, rule recognition, rule interpretation, and the making of decisions. A good format to follow in the practice sequence is the following:

A. *Clerking.* No practice is necessary–just demonstration and explanation.

B. *Starting.* Many repeated practices are essential to gain the necessary skill in starting.

C. *Judging and Timing.* Many practices are needed to achieve accuracy in timing and choosing places.

D. *Field Judging.* It is not necessary to practice the mark-measuring more than once. It will be necessary to practice observing the throws and jumps several times for recognition of fouls and to learn the proper technique of calling names, safety, and general handling of the event.

Rating Session

The written and practical examinations with the detailed instructions for administration are clearly stated in the directions which are sent to the chairman of the rating board. These are issued from the national rating chairman of track and field and are standardized.

In summary, the candidates should be well versed and trained in the following aspects and areas:

1. Thorough knowledge of fouls and infractions, duties, dress, and techniques.

2. Accuracy, quickness, and clearness in announcing fouls—the ability to make the correct decision quickly and in an acceptable manner.

3. Ability to satisfactorily start various races, both straight and staggered; to correctly judge and inspect the races; to time accurately; and to discern track infractions.

4. Ability to correctly judge and rule on fouls in the field events and to accurately measure and mark the throws and jumps.

5. Knowledge of correct positions to judge the events and ability to give both good verbal instructions and correct arm and whistle signals.

6. Proper attitude and demeanor for making quick and accurate decisions and for carrying out officiating duties to the smooth and correct conclusion of the meet and events.

7. Thorough knowledge of the written rules of all events and the officials' duties.

Let's Be Official

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Track and field continues to gain popularity in girls physical education programs. Those schools that permit interschool competition are scheduling more track meets for girls. As track gains in status as a desirable sport activity for girls and women, it behooves us to take a closer look at the manner in which we conduct our competitions, whether interclass, intramural, interscholastic, or open meets.

Specifically, if track is to be recognized as a major sport for girls, the persons involved with conducting instruction and competition must emphasize the validity and necessity of employing official rules. Infringements of the rules must not be permitted. Neither should substitute or "sand lot" rules be allowed. The young girl receives no favor when she is allowed to "scratch just a little" in the long jump, or take "just one more" false start and still win the event. It is not only unfair to the performer to tolerate slight tendencies to cheat, but it is extremely difficult to justify such leniency to the child who has been taught to follow the rules explicitly at all costs.

The following comments are offered to emphasize rules that are often neglected and to discourage "sand lot" rules that are substituted for official rules:

1. The command, "Get on your mark, get set, go," has gone. Teach the crouch start and use the generally accepted starting commands "Take your mark," "Set," and after two seconds, a gun shot for "go." An effort should be made to use a starting pistol or clap-board. "Set" should not be called until all runners are ready in the "mark" position. Runners indicate they are ready when they have their fingers in position behind the starting line.
2. A runner should be disqualified after her second false start regardless of how good her potential is. Too often the better runner is given another chance because it "would be a shame" not to permit her to run.
3. Don't allow runners to cross into the next lane during a straightaway race. The "two strides" rule must be watched for and enforced in those races which permit the runners to cross in front of one another.
4. Use yarn at the finish line. It is inexpensive and easily fastened to finish posts or held by two students (not judges). Care should be

taken to keep the yarn chest high. Picking winners is much easier and more fair when finish yarn is used to determine when the torso reaches the finish line.

5. Measure distances with a steel tape for competition. Pacing the distance is adequate for instruction but not accurate enough for competition.

6. Use inspectors to enforce the 22-yard pass zone in relays. Disqualify teams that must use more than the allotted distance. These same inspectors can watch for illegal baton passes.

7. Watch for the hurdler who carries her leg or foot alongside the hurdle. She must cross completely over her own hurdle.

8. Use official shots for the shot put, not softballs.

9. During the shot put the shot may not pass behind or below the shoulder. Too often girls win this event by throwing the shot, while others lose in adhering strictly to the rules of putting. Throwing is a result of poor teaching.

10. Watch the toeboard. The competitor may not touch the top of it or step out of the circle during a legal put. The competitor must leave the *rear half* of the circle. The same rules apply to the discus throw.

11. Scratch marks are important. In the ball throws and the long jumps, no competitor should be allowed to step on or over the scratch line. This includes any part of the big toe. A girl who makes a record long jump after scratching has not performed as well as the girl who jumps one foot shorter, but takes off behind the scratch line. A major part of the skill involved in the long jump is executing the take-off at the most advantageous, legal point.

12. Girls should be allowed to exercise their right to pass in the high jump. Often there are ties, and winners are determined by the fewest number of misses, the number of attempts, or the number of trials throughout the competition.

13. A girl may "balk" at jumping as often as she likes. However, if any part of her body touches the ground beyond the plane of the uprights, she shall be charged with a failure.

14. One-foot take-offs must be used in the high jump. Diving from a two-foot take-off is not legal.

15. There is no rule that permits a girl to be "safe" if she gets out of the pit before the bar falls. Employing this "sand lot" rule causes girls to hurry and not concentrate on their jumping style.

In addition to these common errors in officiating track and field, many inexcusable mistakes are made in measuring, timing, and picking winners in various events. Every effort should be made to see that all officials at a meet are aware of these techniques.

Student competitors must learn the rules that apply to their events and expect to be governed by them during competition. All

officials of a track and field meet owe it to the competitors to be completely familiar with all the rules of track and field. If an infringement calls for disqualification, the official must be conscientious enough to enforce the rule.

We pride ourselves on the use of official rules in other sports. Girls participating in track and field deserve the same dedication to the principles of fair competition. Let's be official!

The Relationship of the AAU and the DGWS in Women's Track and Field

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Interest and participation in track and field by women has been on the increase during the past several years. This interest is due, in part, to the television coverage of track and field meets and also to the fine showing of the present participants in national and international meets. It is now apparent that the young women of our nation are acquiring a competitive spirit and that track and field can offer them the opportunity to compete.

There are many organizations in the United States at the present time that are concerned with the rules and policies of women in competition, notably the AAU and DGWS. Competitive standards and policies of the DGWS are followed by the participant during the school year. The AAU, by organizing local, state, and national meets, governs the participant's activities during the summer months. Those who hold AAU membership cards, however, must compete under the AAU rules throughout the entire year.

To gain a more thorough knowledge of the policies and standards necessary to meet the needs of the girls and women in competition, now is the time for greater cooperation between these two groups. Now, more than at any other time in the history of women in competition, it is imperative that more women physical educators accept their responsibilities not only to the novice but also to the highly skilled participant. Men have given much of their time to further the opportunities for competition in the past, but the women of DGWS must presently work together to organize their own competitive program.

If we are to provide increased opportunities for the highly skilled as well as the novice in track and field, we must look at the rules, policies, and standards of both the AAU and the DGWS. The current rules in the DGWS *Track and Field Guide* are very similar to those found in the AAU rule book. The major difference is that the AAU rules are designed for competition on the international level. The same safeguards for the participant exist in both publications. The same inherent concern for the individual is reflected by members of both organizations. One of the main reasons for this similarity is because of the outstanding people who have served on the AAU

boards to further the understanding between the two organizations. It is through the efforts of such people that DGWS is represented on the governing bodies of AAU and similar organizations.

There are many things that can be done cooperatively by these two organizations. It is suggested that the following projects be initiated in areas all over the United States:

1. Clinics could be established for students and physical educators to provide coaching and training hints for future athletes and teachers. This is being done more extensively in some areas than in the past, but there is a need for even greater support in many locations.

2. The AAU and DGWS, working together, could organize local summer programs of "All-Comer" meets to provide continued opportunities for competition during the summer months. This can be effective only if the woman physical educator is active in the local AAU and the AAU affiliated person works with the state DGWS group.

3. Both groups could assist local colleges in preparing the future physical educator for the coaching and teaching of track and field. This can be accomplished through cosponsored meetings with the physical education majors of the local colleges, thus providing both the AAU and DGWS with officials.

4. Established local DGWS rating boards could set up their offerings in training and rating track and field officials. This would be the main step forward in furthering track and field in the United States. The need for qualified officials, not only for DGWS meets but for the AAU women's meets, is the first prerequisite for organizing a more expanded program for girls and women.

5. Local, state, and national representatives from all of the governing bodies could meet together and establish a common agreement in the standards of competition for girls and women, both in school and outside of school. The nation must progress toward forming a national women's track and field governing body, one that is organized and controlled by women, for the woman competitor. Women in AAU and women in DGWS must sit down at the same table and work toward a common goal. Physical educators must set aside the long-standing fear of the dangers involved in highly competitive sports for women.

6. Committees could be established for cooperative analysis of the local needs in track and field at the state and local level. These committees should be composed of representatives from AAU, DGWS, recreation bureaus, school administrators, and other interested individuals who wish to be involved.

In the past the highly skilled individual, as well as the novice, has been prevented from achieving her goal in athletics because of the

misunderstandings and hesitant actions of women in both AAU and DGWS. We must accept the present trend in competitive sports for women. The need for qualified women teachers, officials, and activity specialists is increasing because of the demand of women athletes. It is apparent throughout the nation and the world that the image of the woman athlete is changing and the change is positive in nature.

The AAU has accepted many of the standards set forth by the DGWS as acceptable for *all* women athletes. These same policies and standards appear in the AAU and DGWS rule guides. Now is the time for both of these organizations to progress toward a greater understanding of the role that each must play in meeting the needs of the girl and woman participant, including the beginner, the novice, and the highly skilled individual.

If physical educators believe in the standards set forth by DGWS, we must not merely pay lip service to them, we must enforce them throughout the school year and even into the summer months of competition. By cooperating with AAU and similar organizations, programs of the highest quality standards, policies, and rules can be carried over into the summer porgram of competition. We cannot wait much longer for decisions to be made. For the encouragement and advancement of the participant and for the future of women in sports, such actions are needed now.